

JPRS 77114

7 January 1981

# Worldwide Report

ENVIRONMENTAL QUALITY

No. 282



FOREIGN BROADCAST INFORMATION SERVICE

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REPORT DOCUMENTATION PAGE		1. REPORT NO. JPRS 77114	2.	3. Respondent's Assessment No.
4. Title and Subtitle  WORLDWIDE REPORT: ENVIRONMENTAL QUALITY, No. 282		5. Report Date 7 January 1981		6.
7. Author(s)		8. Performing Organization Rept. No.		
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201		10. Project/Task/Work Unit No.		11. Contract(s) or Grant(s) No. (G) (G)
12. Sponsoring Organization Name and Address  As above		13. Type of Report & Period Covered  14.		
15. Supplementary Notes				
16. Abstract (Limit 300 words)  This serial report contains worldwide press and radio coverage of environmental pollution and its effects; and pollution control technology, organizations, and programs.				
17. Document Analysis a. Descriptors  Worldwide Pollution Environmental Control Meteorology Ecology				
b. Headlines/Open-Ended Terms  a. COSATI Items/Groups 4, 6, 18G, 18H				
18. Availability Statement Unlimited Availability Sold by NTIS Springfield, Virginia 22161		19. Security Class (This Report) UNCLASSIFIED	20. No. of Pages 64	
		21. Security Class (This Page) UNCLASSIFIED	22. Price	

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NUCLEAR FALLOUT USED TO MEASURE SOIL EROSION

Canberra THE AUSTRALIAN in English 6 Nov 80 p 4

[Article by Vernon Graham]

[Text] Scientists are using fallout from nuclear bomb tests to monitor soil erosion, now a problem effecting half of Australia's agricultural land.

The process is based on a slight but measurable radioactivity in all surface soils, due to the presence of small amounts of caesium 137.

This element was spread through the atmosphere and then deposited on the surface of the earth following large-scale nuclear bomb testing.

A high recording of caesium 137 in soil means the area is stable and erosion free.

But if little caesium 137 is present it shows that the top-soil at the time of the latest atomic test has been washed or blown away, or covered by soil from elsewhere.

The cost of soil conservation work, estimated at \$1000 million this year, can be reduced if erosion is detected before it becomes obvious.

The radioactivity testing is being done by Mr Bryan Campbell and his associates at the Atomic Energy Commission in cooperation with soil scientists and geographers from other organisations.

Vineyards

Recent work has been concentrated in NSW but experiments are planned for other States and in South-east Asia.

In the Maluna Creek catchment area at Pokolbin, an important wine producing area in the Hunter Valley, Mr Campbell has been working with staff from Newcastle University and the NSW Government Soil Conservation Centre at Scone.

They have established that rain regularly washes soil from the cultivated vineyards; large quantities have been deposited downstream in nearby alluvial pans and flood plains. At one test site in an alluvial pan, precise measurements indicated that the top 65 cm of soil had been put there by soil erosion.

AUSTRALIA

METALS POLLUTION OF SWAN RIVER BEING INVESTIGATED

Perth THE WEST AUSTRALIAN in English 6 Nov 80 p 8

[Text] The Waterways Commission is investigating the levels of heavy metals flowing into the Swan River from metropolitan drainage systems.

The commission's annual report, tabled in State Parliament this week, expressed, anxiety about the levels discovered after sampling had taken place.

A research officer with the commission, Mr Robert Atkins, said yesterday that some heavy metals might be getting into the drains in the Bayswater and Bassendean industrial areas.

The metals could be zinc, chromium and nickel. The drains ran through the areas and eventually into the Swan River.

But Mr Atkins said that the tests were not complete, and it was too early to say if the levels were high enough to cause worry.

There would be some cause for anxiety if the levels were high and if they were getting into the food chain in the river.

The metals might be getting washed away into the sea or absorbed into the sediment, where they would present no problem.

But metals could also be absorbed by mussels or eaten by bottom-feeding fish. This would be worrying.

The survey started in June this year and was now at the half-way stage.

The commission said it was worried about the level of Dieldrin in the Preston River.

Tests were continuing into the levels of pesticides in the river.

Anxiety about pesticide levels first arose in a report prepared by consultants for the commission in January this year.

The Preston River starts east of Donnybrook and flows into the southern end of the Leschenault Inlet. It passes through Dardanup and Bunbury.

Mr Atkins said that the survey would continue in the coming summer.

The dieldrin levels were the main worry, but testing for aldrin and DDT also was being carried out.

[Aldrin is a chemical used in the control of termites.] [as printed]

Mr Atkins said it appeared that the pesticides were coming from agricultural land in the Preston River catchment area.

He understood that no domestic water supply was drawn from the river and that it was used only in the irrigation of the surrounding agricultural area.

The reason for the survey was to see if there was evidence to substantiate the results of the earlier survey.

The commission's report said that the levels were below acceptable standards.

The Department of Agriculture is taking part in the monitoring.

CSO: 5000

## AUSTRALIA

### WATERWAYS COMMISSION WANTS AUTHORITY STRENGTHENED

Perth THE WEST AUSTRALIAN in English 6 Nov 80 p 8

[Text] The Waterways Commission wants the early introduction of regulations to extend and define the jurisdiction concerning the Swan River, the Peel Inlet and the Leschenault Inlet management authorities.

In its annual report, the commissioner, Mr D. N. Robins, said that because of the lack of regulations the commission ran the risk of a major waterside area being permanently damaged because it had no power to prevent it.

He said that, after less than a year as commissioner, he was convinced that the Swan River Management Authority should have some responsibility for the river banks and some associated land. This was the case with the Peel Inlet and Leschenault Inlet authorities.

Every other waterway and pollution-management authority in the world that he had examined had associated land responsibilities.

#### Morale

The morale of the field staff of the authorities was high, considering that there were times when they had to stand by and see damage being done when it would be their job to repair it later.

But outside Parliament, the Minister for Conservation and Environment, Mr Masters, said that the regulations would not be introduced till there was agreement between the three management authorities and the local-government authorities involved.

Agreement still had to be reached on what associated land should come under the jurisdiction of the commission and how far his land should extend.

Mr Masters said that at present, the Peel Inlet and Leschenault Inlet authorities were operating with the cooperation of the local authorities.

But no regulations extended the jurisdiction of the two management authorities to the river banks and associated land. Decisions on these areas still rested with the local-government authority.

The Swan River Management Authority's jurisdiction ended at the high-water mark.

#### Disagreement

Mr Masters said that there was disagreement among local councils bordering the Swan River about the extension of the authority's powers to cover river banks and some associated land. Some were in favour and others opposed the move.

Every endeavour would be made to reach an understanding before regulations were introduced, Mr Masters said.

The proposed regulations would extend the powers of the three management authorities to act to ensure the protection of the waterways.

#### Monitoring

In the report Mr Robins said that monitoring and inspection programmes were carried out continuously by the management authorities. Despite the limited funds available, good progress had been made in pollution control and in improving water quality and there had been some reduction in erosion.

But the programme of inspections was only partly effective because the regulations had not yet been approved.

During the year schemes allowing heavier public use of the waterways without damage had been carried out in all the authority areas.

These schemes were planned to improve areas without spoiling the waterways.

Mr Robins said that the new regulations were needed to enable the commission to enforce the Act.

Under the present Act, the commission had authority to act on some associated land in the Peel and Leschenault Inlets.

But this was not the case on the Swan River where its jurisdiction ended at the high-water mark.

Mr Robins said that the commission had been charged with looking after the waterways. The regulations would enable it to carry out this task.

The regulations would not take away the authority of the councils or shires whose land abutted the waterways.

CSO: 5000

## AUSTRALIA

### EPA FAILS IN MONITORING OF AIR POLLUTION

Melbourne THE AGE in English 8 Nov 80 pp 1, 15

[Article by Rod Usher: "EPA Fails Watchdog Role on Air Pollution"]

[Excerpts] Vinyl chloride monomer can be nasty. One of the chemical building blocks of PVC plastic, it is classified by environment protection bodies as a "Class 3 Indicator," which means it is "potentially carcinogenic, mutagenic, teratogenic (monster-producing), highly toxic or highly persistent."

Whether unauthorised amounts of vinyl chloride monomer (VCM) are being allowed into the air in Melbourne is a question that falls to the Environment Protection Authority. The EPA's answer is a qualified "yes," which raises serious unauthorised pollutants may be being released from factory chimneys. [as published]

An INSIGHT investigation indicates that the EPA, set up eight years ago as a watchdog against pollution, has failed to fulfill its role of overseeing air quality standards for factories.

The EPA's annual report for the year 1979-80, recently tabled in Parliament, gives some indication of the success of its watchdog role. Since 1975, not one prosecution has been brought against factories for discharging to air without a licence, and only five charges have been brought for breaching a licence. (The NSW Pollution Control Commission last year alone recorded 33 convictions on air pollution charges.)

The EPA has issued 1617 current licences to discharge (one licence can cover up to 300 individual discharge points), but last year it tested only 17 chimneys to see that these licences were being complied with.

Other criticisms of the EPA's air quality branch include:

--Failure to carry out full pollution tests at factories despite repeated requests from residents' groups.

--Failure to prosecute companies which it knows are in breach of the Environment Protection Act.

--The above act stipulates that a decision on an application to emit a pollutant should be made within four months of it being lodged. One company lodged two applications on 25 October last year, and still no decisions have been issued.

--The EPA has refused to make public the results of compulsory self-monitoring by factories, which means that complaints have no data on which to base their cases.

--EPA staff turnover is high, and morale is low.

Labor frontbencher Evan Walker, who raised the issue of the efficiency of the air quality branch in Parliament last week, said: "It is apparent that there is a huge discrepancy between the intent of the law and the reality."

One example of this discrepancy is the battle between a residents' group in Mordialloc and the big Nylex plastics company on the Nepean Highway.

One of the claims made by the group--the Mordialloc-Moorabbin Residents for Clean Air (MMRCA)--is that Nylex has allowed the release of vinyl chloride monomer without a licence to do so.

Highly toxic though it is, VCM is minute in the scale of Nylex's operations. Its licence allows it to emit 15 chemicals to a total of 10,981 kilograms a day from 78 discharge points. The system the EPA has encouraged for Nylex, and all of Melbourne's bigger factories, is for companies to self-monitor their own emissions based on their own estimates made in licence applications. The Catch 22 for people who want to question this system is that the EPA's policy is not to make public this self-monitoring.

The MMRCA technical committee has made some of its own calculations for one of the chemicals covered by licence at Nylex. The substance is a solvent called methyl ethyl ketone (MEK), of which the company is allowed to emit 6081 kilograms a day. Exposure to concentrated MEK can cause dizziness, headaches and nausea and can irritate the eyes.

The committee, using information contained in Nylex's licence application, made computer estimates that concentrations of MEK from Nylex are between 12 per cent and 66 per cent higher than the level recommended in the EPA's draft air policy issued last year.

Mr Doug Weir, general manager of Nylex's Australian operations, told INSIGHT there was no pollution problem.

Mr Weir described the MMRCA technical group as a "highly emotional, highly qualified, well organised group representing a very small minority."

On VCM Mr Weir said: "Any emissions are so small that they cannot be measured. We have tried and there is simply no reading at all for VCM."

The residents' complaints about the EPA and Nylex have also worried Mordialloc council. A report to the council by its chief health surveyor, Mr Colin Schleiger, on 29 September this year that it could be argued that the "denial" of access to self-monitoring results "transgresses the spirit of the Environmental Protection Act." The report asked: "Why should proof of compliance with a public document (an EPA licence) be so unnecessarily involved or hard to obtain?"

The EPA says this denial is because of "policy."

Another body angry about EPA treatment of its complaints is the nearby Cheltenham-Beaumaris Clean Air Group. It claims that Kemrez Chemicals, a factory in Reserve Road, Cheltenham, has acted outside the legislation with impunity for years.

Moorabbin council has also been concerned about the authority and Kemrez. A confidential report to the council by its chief health surveyor refers to the "history of complaints and apparent lack of action by the Environment Protection Authority."

Part of the trouble with the EPA's air quality branch is shortage of staff. The authority's stack testing team has been depleted to the extent that it now has only one scientific officer, one technical officer and one part-time technical assistant. A stack test involves climbing perhaps half way up a chimney and extracting the gases being emitted using a tube inserted in a hole. The company has to provide a scaffold or ladder and drill the hole.

An experienced former EPA officer, who left the authority because he was disillusioned, told INSIGHT: "Stack testing is a joke." He said the scientific officer on the team had to spend 80 percent of her time answering phone calls to companies who were self-monitoring and needed advice. "The team simply doesn't have the opportunity to get out into the field."

He said the authority had become "another bureaucracy which overwhelms itself with its own paper work."

"The Government must take a lot of the blame. There is hundreds of thousands of dollars worth of pollution monitoring equipment shoved away in storerooms because the people needed to use it can't be hired."

The EPA annual report shows that of 189 staff, 31 transferred or resigned during the year.

The problems faced by complainants in the bayside areas are found in other suburbs where factories and houses mix (the 13.2 hectare Nylex plant has eight schools four pre-schools within a 1600-metre radius).

CSO: 5000

## USES OF MURRAY RIVER SEEN AS GRAVE THREAT TO SOUTH

### Three-State Battle

Canberra THE AUSTRALIAN in English 5 Nov 80 p 9

(Article by Peter Ward)

**[Text]** THE Tonkin Government is angry and frustrated.

The Wran Government, it believes, is obdurate, consumed by self-interest, and indulges in unAustralian activities.

Or, to put it in the words of the South Australian Attorney-General, Mr Griffen: "We have become a sewer for NSW."

He was referring to the River Murray system and what NSW is doing to it.

Looming is a major battle in the High Court, providing the opinions of the law officers are for it, and a series of holding actions in the NSW Land and Environment Court, one of which is under way at the moment.

For South Australia, the conflict concerns a question of survival.

As the leader of the Australian Democrats in the State Parliament, Mr Robin Millhouse, put it recently in the House of Assembly: "The stark fact is that we South Australians live on the edge of a desert, which is slowly coming southwards."

"Without water from the Murray River, our community, if it did not die

altogether, at the least could not exist as it does now."

"The question of water in this State is of supreme importance to us all."

If history had not made Australia a federation, they would have been fighting words. Belligerent disputes over water have, after all, divided nations for thousands of years.

Even the Maunsell Report into Murray Valley salinity, published last year, commences with a dour historical observation:

"The eclipse of Mesopotamian civilisation in the 13th century BC was due as much to the salinisation of soils in its irrigation areas as to the ravages of Mongolian invaders," it says.

Commissioned by the four governments of the River Murray Waters Agreement — the Commonwealth, NSW, Victoria and South Australia — it graphically defines the urgency of the problem for South Australia.

It is salt in its rural and urban water supplies. It is how to stop NSW in particular from helping make the State more of a desert than it is.

The battle is one of words — ministerial, intergovernmental, political and legal.

South Australia is the driest State in the driest continent in the world, its politicians are fond of saying.

The River Murray is its lifeline, they also say. It supplies water for more than two-thirds of the State's settled area, more than 90 per cent of its population, and most of its primary and secondary industry.

As far north as Woomera and as far south as Keith in the south-east, a massive network of mains fed by five major pipelines from the Murray and supplemented by a relatively meagre collection of reservoirs in the Flinders and Lofty ranges literally keep the State's urban and rural regions alive.

In dry years — for instance, 1977-78 — Adelaide had to take 87 per cent of its water from the Murray.

That was the year trees and plants — even hardy Australian trees — in the metropolitan area turned brown at the tips, lost their leaves and died, because the water from the Murray was too saline.

It is a chronic problem for Adelaide at the best of times. The typical salinity value of Adelaide's water is 400 parts per million, compared with Sydney's 80 ppm and Melbourne's 50 ppm.

The World Health Organisation's drinking water standard is set at 500 ppm. citrus trees and vineyards die after 600 ppm, the maximum concentration for urban and industrial use is 700 ppm, the human taste threshold for salty water is 1000 ppm, and the Murray River in South Australia has often exceeded 1000 ppm.

And the current most dismal environmental statistic being used in South Australia by the Water Resources

Minister, Mr Peter Arnold, is that each year the Murray carries more than a million tonnes of salt across the State border.

"We inherit that salt from Victoria and NSW and have to transport it to the sea," he says.

"While we are on our statutory water allocation under the River Murray Waters Agreement, or while there is no flow to the sea, that salt is locked up in South Australia.

### 'DESPERATE SITUATION'

"Any further irrigation diversions in the system — such as those currently contemplated by NSW — could face South Australia with a desperate situation."

Desperate is the word. Both Mr Arnold and Mr Griffin have used it, especially in relation to the NSW plans to open 60 000 to 100 000 ha of irrigation land from the Darling in addition to its, and Victoria's, already massive irrigation diversions on the Riverina plains and in the western Mallee zone.

Massive is the word, too. Together, NSW and Victoria already irrigate some 10 000 sq km of their territory, taking some 6.2 million megalitres from the Murray system to do so each year.

It is South Australia's belief that the River Murray basin States (which include Queensland) have gone about as far as they can go in diverting water from the system. In fact, they may have gone too far already.

### Irrigation diversions and re-entry, the elaborate system of locks on the Murray,

the high naturally saline water tables in the Murray Valley and the wholesale destruction of river redgum forests, all contribute to the growing salinity crisis.

Additional environmental factors affecting water quality include rising pollution by organic and solid wastes, fertilisers and the introduction of exotic living species such as the European carp and the water hyacinth.

On top of all that are the politicians and the pressures on them in NSW to increase water diversions on a scale more than twice that of South Australia's total irrigation area, which has been frozen for more than a decade.

South Australia accepts the fact that the political problems that would be involved in buying back the irrigation farms are insurmountable, short of a national disaster equal to the

devastation that occurred in Mexico's Mexicali Valley which was virtually wiped out as a result of salt coming from the United States on the Colorado River.

What they want from Premier Wran is a moratorium on future irrigation diversions on the Darling until the effects of such diversions can be studied and estimated by the River Murray Commission.

They also want NSW to join with Victoria and the Commonwealth in agreeing to essential changes to the 1914 River Murray Water Agreement and subsequent acts, as passed by all four parliaments.

That agreement guarantees South Australia minimum Murray water flow in normal years of 1.55 million megalitres, with special scales for years of restriction.

But it does not guarantee water quality. "It could be pure sewage, and we might not be able to do anything about it as the agreement stands," one official says.

The critical point has already been reached. Mr Arnold told the South Australian Parliament recently that in only one month in the past 10 has any water passed through the barrages to the sea at the mouth of the river.

There are marked parallels between South Australia's situation on the Murray and Mexico's on the Colorado.

After an interminable dispute and an environmental disaster, the United States finally agreed recently that water crossing Mexico's border would not be in excess of 115 ppm, plus or minus 30 ppm, over and above the salinity level contained in the Imperial Dam, the last United States dam on that hardpressed major river system.

"The River Murray Waters Act must include a similar provision ensuring that water entering South Australia will be on a similar basis," Mr Arnold says.

The Tonkin Government is taking the initiative of pursuing the State's rights through legal means, using NSW legislation to do so.

The Government appeared before the Western Land Board at Wentworth and Walgett, and is now defending itself in a NSW appeal against one of the board's decisions which held that South Australia was "a person affected" by the proposed new diversions.

South Australia is also examining whether an Australian "sovereign" State can seek an injunction in the High Court restraining the activities of another "sovereign" State in relation to water rights or quality.

And NSW refuses to budge. In a letter to Premier Tonkin, Premier Wran said the State sent less salt into South Australia than did Victoria.

That brought a quick retort from South Australia's Attorney-General.

"That's really quite irresponsible of NSW," Mr Griffin said.

"In effect it means they're saying they won't consider amendments to the River Murray Water Agreement--and are ignoring the national issues raised in the Maunsell Report on Murray Valley salinity until they've got substantial irrigation projects under way.

"South Australia is prepared to go to great legal lengths to prevent that, to pursue its rights and present its cases wherever it is reasonable to do so."

#### Salinity Threat

Sydney THE SYDNEY MORNING HERALD in English 5 Nov 80 p 12

[Article by Andrew Stone]

[Text] A Mildura citrus grower, Mr Dudley Marrows, has signed about 400 objections to irrigation licenses for the vast Murray-Darling river system.

His signature has frustrated farmers in the queue for water, created lengthy delays for the NSW Land Board, left the Water Resources Commission high and dry and heartened the South Australian Government.

Yesterday Mr Marrows said he would not relent until "the critical salinity levels are brought under the control of the River Murray Commission."

"Australia's one and only inland river system is in grave danger," he said. "We're just trying to protect it."

A softly spoken horticulturist who moved on to a small block at Buronga, just north of Mildura, after World War II, Mr Marrows said water quality in the lower Murray had steadily

deteriorated during the long drought.

Salt levels in parts of the Darling were higher than ever before, threatening the quality and yield of irrigated fruit and vegetable crops from one of Australia's richest food bowls.

The Murray-Darling system, which drains about one-seventh of Australia's land surface, would become polluted beyond use downstream unless a searching review and assessment were made.

Several grower bodies, including the Suaraysia and Riverland Committee on Salinity and the Lower Murray NSW Water Users' Association, warned in authority of the River Murray Commission widened to

make the study, Mr Marrows said.

This role for the commission was recommended last year by a Senate committee on science and the environment.

Mr Marrows said he had signed all the objections on behalf of these groups because only individuals could oppose licence applications.

Frugrowers had estimated that about 60,000 hectares were earmarked for irrigation. Much of this was potential cotton land beside the Darling River, south of depleted Lake Menindee.

Water diversions on this scale could have catastrophic effects, Mr Marrows said.

Mr Marrows has a powerful ally in the South Australian Minister for Water Resources, Mr Peter Arnold.

"We want to see a moratorium on any further irrigation diversions over the whole of the Murray-Darling system," Mr Arnold said.

The South Australian Government is appearing, with several NSW irrigators and the Murray Industries Development Association, in the Land and Environment Court over a licence appeal.

Mr Arnold said the outcome would be important for all downstream users of Darling and Murray waters.

## NSW Defense

Sydney THE SYDNEY MORNING HERALD in English 6 Nov 80 p 10

[Article by Andrew Stone]

[Text]

The NSW Minister for Conservation and Water Resources, Mr Gordon, last night strongly defended the State's management of the River Murray system.

Rejecting South Australian claims that irrigation diversions in NSW had turned the big inland river into a salty sewer, Mr Gordon said: "No one can point the finger at NSW."

"We contribute a minor amount of salt to the Murray amount of salt to the Murray major study of Murray Valley salinity) showed that.

"If they expect us to flush clean water down the Murray

and deprive our own users (just) to wash the salt away, then they are expecting a bit much."

Mr Gordon, speaking from Wagga Wagga, where the NSW Cabinet meets today, said he was at a loss to understand the latest attack on NSW and its river management.

"NSW is acting more responsibly than either Victoria or South Australia," he said.

"We have more desalination projects going on and more restrictions on irrigation licences with the avenues for objections."

However, Mr Gordon said the weight of objections to new

licences, especially from Mildura citrus grower Mr Daley Marrows, had created resentment among many farmers who could legitimately and safely use water.

To make river management more flexible, he would recommend revisions to the grounds for objection.

"There is no question of lifting the lid on this, but I'm sure NSW farmers will support me," he said.

A senior officer in the Water Resources Commission said moves to divert more water for

irrigation from River Murray tributaries were within NSW rights.

The water at issue was a NSW resource, the commission's chief engineer, Mr Bill Youll, said, and any diversion would occur only when there was no risk of salt being added.

He said the State was contributing \$7.5 million — half the cost — to salinity-control works in the Wakool region, north of Deniliquin.

Victoria and South Australia, however, had not matched this effort.

## South's Reply

Sydney THE SYDNEY MORNING HERALD in English 8 Nov 80 p 6

[Article by Andrew Stone]

[Text] NSW management of the River Murray was irresponsible and rooted in self-interest, the South Australian Minister for Water Resources, Mr Peter Arnold, said yesterday.

In a bitter attack, Mr Arnold said statements made by the NSW Minister for Conservation and Water Resources, Mr Gordon, were inaccurate and misleading.

"They also highlighted the contempt with which NSW is treating South

Australia's interests in the matter," Mr Arnold said.

It was not correct, as had been claimed, that NSW efforts contributed more to the Murray's water quality.

A South Australian scheme at Noora to stop salt entering the river

would be more effective than all NSW projects combined.

Progress on similar salinity-control works at Rufus River had been frustrated by NSW and its failure to agree to conditions accepted by Victoria, South Australia and the Commonwealth, Mr Arnold said.

The South Australian Government's objections were based on future NSW

irrigation diversions for up to 50,000 hectares on the Darling River, an area which exceeded land under irrigation from the Murray in South Australia.

"South Australia is objecting because NSW is going ahead with those additional diversions without consideration of one of the principal conclusions of the Maunsell report (a big study of Murray Valley salinity)," he said.

"The relevant section of that report states that the drainage and salinity effects of any proposed expansion or intensification of irrigation should be thoroughly investigated."

But Mr Gordon, opening a \$3 million weir in his Loxton electorate, said South Australia was putting the State into a "bogeyman role."

### Allocation Delays

Sydney THE SYDNEY MORNING HERALD in English 4 Nov 80 p 13

[Text] Civil war is brewing over water allocations and allowances along many drought-stricken river valleys in NSW, according to the State Opposition's spokesman on water resources, Mr Tim Fischer.

Mr Fischer told his electorate of Murray at the weekend that if urgent action was not taken many farmers would suffer enormous losses.

He said massive delays in Land Board hearings of objections to the issue of irrigation licences had led to water being held in dams rather than being distributed to farmers.

A spokesman for the Minister for Water Resources, Mr Gordon, said the main reason for the delay in board hearings was the number of objections.

Four hundred and fifty objections had been lodged, 400 of them by a Beronga man who

had started a crusade for the welfare of the Murray.

Each application was entitled to a hearing, and that could take up to 800 sitting days.

Thirty-four applications were now before the board.

The South Australian Government had tried to lodge objections to stop development along the Murray in NSW.

Because governments cannot lodge objections, the South Australian Minister for Water Resources was planning to lodge an objection in his name.

CSO: 5000

## COAL BOOM DESTROYING SINGLETON RURAL LIFE

Sydney THE SYDNEY MORNING HERALD in English 8 Nov 80 pp 13-14

[Article by Graham Williams: "Singleton's Boomtime Rhyme...of Old King Coal"]

[Text] "Old King Coal  
Was a dusty old soul  
And he worked for the SEC.  
He called for his draglines,  
He called for his trucks  
And he poured his pollution over me."

The children chanted their grimy rhyme as they played in their schoolyard where the flowers won't grow any more at Ravensworth Public School, 18 km north of Singleton.

Old King Coal is the nickname of one of the two huge draglines with their gigantic robot arms that work round-the-clock in the State Electricity Commission's opencut mine on the other side of the New England Highway.

A long high wall of slag along the edge of the highway casts early shadows over the school. It hides from view the draglines as they pick up 60 cubic meters of dirt and rock at a time in their great claws.

But the wall doesn't protect the children from the dust and grit that floats over them from the barren, lunar-like landscape--except when they sit in their classroom, especially air-conditioned to resist the airborne pollution.

Like children in a heavy industrial area, they have become accustomed to the dust clouds and the sickening blasts from the mine and to the thunderous roar of the huge coal trucks that race continuously past the school.

The century-old village of Ravensworth is a puny victim of this massive industrial upheaval that is repeated at five other open-cut mines in the Singleton Shire--with a further 14 about to open or on the drawing boards.

This is one of the oldest open-cut mines and the largest in Australia, producing 4 million tonnes of coal a year to feed the hungry Liddell Power Station, 15 km north.

The Ravensworth open-cut symbolises the race to transform large areas of the Upper Hunter from quiet rural communities into massive industrial areas gouging out coal.

It is almost terrifying in its immensity. Its mountains of slag, its 80m-deep gorges clawed out by huge steel hands and its giant operatives like Old King Coal overwhelm the landscape where once cattle grazed.

Most of the residents of Ravensworth have sold out to the Electricity Commission and gone away.

For the school principal, Lance Kelly and his wife Elsie, who live next to the school, the open-cut has helped kill off a dream.

Up till four years ago they won many prizes for their beautiful garden and its fragrant flowers. Now the garden is a wilderness.

But what disturbs Mr Kelly most is what he sees as the insensitivity of the commission and the company that operates the mine, Costain.

I've seen this place change from a quiet rural community to an industrial dustbowl. You can never get used to the noise of the dragline at night.

"We were promised the dragline wouldn't operate at night. That was the first of a trail of broken promises.

"The blasting makes the building vibrate, objects fall down, dust comes out of the ceiling and tiles crack. All the complaints of structural damage due to blasting have been denied."

Mr Kelly said promises that dragline operations would cease in high winds had not been kept. "We've had dust storms in high winds from the dragline that have covered our bodies and forced everybody, including the children, inside.

"Things are a bit better now, but the fallout is still very bad."

Five kilometers away, a grazier, Jim Coffey, is concerned about the fallout from the Hebbden open-cut mine nearby.

"The grit and dust fallout, as well as the pollution from the Liddell Power Station, get into the soil and then into the small creeks and watercourses.

"This pollution will affect the Hunter Valley in time as more mines come on stream--and this is a tremendous food-bowl. The heart is going out of the valley.

"It's being turned from a settled rural area into a vast industrial area. And the pace of development is too fast. It's gone berserk."

Tony Corbin grosses \$1000 a week as a mine deputy ("It's a lot of work but the money's there," he said). He and his family live in a pleasant brick bungalow in Singleton Heights, a classy new Westleigh-type suburb 2 km north of Singleton.

Unlike Ravensworth, this is a new, clean, efficient and very livable suburb with its own shops, new sports centre, new oval and new school.

Singleton Heights is a symbol of the shire's new-found prosperity through coal.

The breadwinners of most of the 600 families in this suburb work in the mines. With wages upwards of \$400 a week, they can afford houses that now fetch up to \$92,000.

The mines are now luring large numbers of skilled and semi-skilled workers from farms and town jobs with their high wages and enticing prospects.

But the Corbins and many other local residents are now worried by an ironic twist of fate--the prospect of an open-cut mine 2 km away that Bloomfield Colliery wants to open.

The mine is part of the relentless march of collieries through the Upper Hunter.

Muswellbrook, 70 km north, will be completely ringed with mines--and the township cannot expand because of the closeness of coal.

Singleton is being steadily hemmed in a huge arc of mines that will eventually sweep around the town from the north-east to the south-west.

The Corbins and many others are glad they are sharing in the mining wealth.

"We came here to be part of the mining boom--and this place is booming," said Mrs Corbin.

But another resident said, "Nothing stops the march to the great God Coal. People are just pushed aside. We don't matter in this mad scramble for energy. It will cause untold havoc and upset the entire economic and environmental balance of this valley."

The mines in the shire already employ 2,100 people and produce 11 million tonnes of coal a year. By 1985 they will be producing three-and-a-half times as much and the mines work-force will treble. Colin Russell, who farms at nearby Mt Thorley said: "This place is changing now from a quiet rural area to a massive industrial complex with three mines operating and four more on the way."

Only a few kilometres from him a massive dragline is being built for Warkworth Mining Co. The huge arm on it will be 110 metres long--the size of a 30-storey building.

A 250-hectare industrial complex is being opened up near his farm with machinery, tyres, oil and other firms to service the huge mining operations.

One mining company is building a new road from the highway so that it can rip up the existing road to mine the precious coal underneath. Huge electricity power lines are being shifted for the same reason.

Buchanan Borehole Colliery is operating two mines in the area and Wambo another--three open-cuts in all. The huge new Warkworth open-cut--that alone will produce 2.5 million tonnes of coal a year with two draglines--will open in the next 18 months.

BHP is planning a major mine south-west of Mr Thorley as is Peko-Wallsend.

Mr Russell, who is chairman of Singleton Dairy Co-operative Society, said: "The mines have bought up huge amounts of land. BHP has acquired 2100 hectares. The scale is mind-boggling.

"Farm labour is now so scarce that if the family unit can't farm a place it has to get out. That will have a very profound long-term effect on agriculture in the Upper Hunter, as more and more people are sucked off farms into the mines."

"We're all very worried about the effect of blasting on our underground irrigation pipes and about the noise and dust."

But he is most perturbed about the competition between farmers and miners for water from the Hunter River. Today the Hunter is hardly flowing at Singleton.

New dams are hurriedly being constructed in the Upper Hunter to provide water for the mining companies, new power stations, the farms and the huge new residential growth of the area.

"Water is our lifeblood and it's crucial that farmers be guaranteed a supply--but we could end up being on the end of the line."

Across the river at Maison Dieu, a rich dairy center with Friesian cattle, the farmers have been protesting for a long time about the dust and blasts from the open-cut mines at Warkworth.

The closest of the three open-cuts is about 3 km away. Mrs Marean Moxey, wife of a dairy farmer, said: "Every farm in this area except ours has had milk rejected at times because sediment has got into the milk from the blasting.

But the residents recently met executives of the open-cut Buchanan Colliery on the issue and the company has said it is concerned to minimise the effects on them.

The mines are clearly increasingly sensitive to the feelings of people they affect.

But farming and mining will not easily co-exist. The farmers are not only fearful about the operations of the mines but are also highly sceptical of their plans to reclaim the land. "Once they're mined an area, they try to rehabilitate it by planting grass over it and feeding it heavily with superphosphate," one farmer said. "But because there's hardly any topsoil and because they don't plant trees, when it rains the erosion is terrible."

**SOUTH WEST CONSERVATIONISTS FIGHT ALCOA SMELTER**

Perth THE WEST AUSTRALIAN in English 11 Nov 80 p 8

[Article by Paul Nayton: "Conservation Takes a New Twist in SW"]

[Text] By calling for a start to aluminium production in the South-West the State government has unearthed a new type of conservationist.

The conservative, affluent and almost exclusively Liberal-voting campaigners against aluminium smelting are shaping up as formidable opponents of the development.

They are people with money and political influence.

Many are the birthright farmers of some of the State's richest agricultural land.

The alumina industry has faced plenty of opposition in the past but most of it has come from young militants concerned for the future of a natural wilderness.

Students and city-based protesters have sat in front of bulldozers and confronted the police to try to stop bauxite mining in the State forest.

The South-West Anti-Smelter Group will use lawyers and industrial chemists to fight what it sees as a threat to private property.

It took only 10 minutes on the telephone for the chairman, Mr David Partridge, to raise the \$2000 he needed to get the campaign off the ground.

Collectively the Brunswick district voters make up one of the Government's strongest pockets of support.

In the last Federal election the Liberal Party picked up three out of four votes cast in the area's ballot boxes.

The electors have regularly helped return the Minister for Town Planning, Mrs June Craig, with a comfortable majority.

The unexpected conflict between the Government and its supporters has been generated by the needs of the aluminium industry.

A South-West smelter would have to be located between the port of Bunbury and the Collie coalfields.

Aluminium production requires a huge supply of electricity.

One smelter would use the equivalent of a third of the State Energy Commission's existing peak load supply.

The only possible fuel source for the power supply at the moment is Collie coal.

The State Government is hoping to commission two smelters by the end of the 1980's.

They will have to be somewhere near the new Bunbury deep-water harbour which was built to become the outlet for the alumina industry's products.

The Government is expecting submissions from two potential developers.

Alcoa Australia Ltd has bought land on the coastal plain west of Brunswick.

About 25 dairy farms are downwind of the site.

#### Study

A consortium of Reynolds Metals Company, Shell Company of Australia Ltd and CSR Pty Ltd is studying the prospects of putting a smelter on land beside an alumina refinery under construction at Worsley.

The Brunswick farmers say either site would damage their operations.

They claim the Alcoa site could drop fluoride fallout, on their pastures and the Worsley site could ruin their irrigation water.

Ten farmers have set up an aluminium inquiry group to run their campaign.

The group, however, does not have unanimous support from the district.

Some farmers have signed lucrative options with Alcoa and believe they should be able to accept a fair price for their land.

Many townspeople believe the smelters will mean more jobs and employment.

Business men in nearby Bunbury are alarmed at the protest movement.

The people with most to gain from a population influx, their promised resources boom has been just around the corner for more than 10 years.

Put in perspective, South-West mining and industrial development during the next decade will involve a capital investment of about \$4000 million.

The North-West gas projects will involve a capital outlay of \$8000 million.

If the aluminium industry developments are less glamorous they will probably be just as significant for regional growth because of the South-West's popularity as a place for permanent settlement; so Bunbury business is not keen to have the golden egg-laying goose killed by a conservation protest.

Bunbury Chamber of Commerce president, Mr Mike Buswell, says city retailers are already committed to an expanding market.

"There has been a lot of investment based on the assumption that these developments are coming," he said.

"If nothing happens I think there will be a few businesses in real trouble."

The aluminium producers have been put in the awkward position of carrying the can for developments which may go to rival corporations.

The Worsley companies have a policy of avoiding public comment. Alcoa says it will put a detailed environmental case if it gets approval to go ahead.

In the meantime, Alcoa officials say they have the world's best technology for coping with the main pollution problem, fluoride emissions.

A company spokesman said his group would farm its own buffer zone around an aluminium smelter.

But, in the best tradition of protest organisations, the Aluminium Inquiry Group has produced a "leaked" document which warns that a smelter would need a 10-kilometre buffer zone.

Neither of the proposed sites would have a 10-kilometre radius.

The inquiry group's information comes from a draft of the Bunbury Regional Plan which has not yet been released.

Rejected

The suggested limit has been rejected as out-of-date by Alcoa.

The company says its new technology allows for a "clean" area much closer to the smelter.

But Alcoa's latest environmental review for a smelter at Portland, in Victoria, confirms there would be some pollution problems up to 10 kilometres from the site.

One of the inquiry group members, Mr Graeme Reading, says nearby farmers are afraid of being squeezed off their land.

He said the group believed fluoride would have an impact on pastures up to 15 kilometres from a smelter.

"If we lose our livelihood because pastures and stock begin to deteriorate in five years we are going to have to prove it was a smelter," he said.

"We don't like the idea of being used as a private buffer zone for an aluminium company.

"So we are going to be measuring the fluoride levels of stock, pastures and soils every year.

"As far as we know there are ways of controlling pollution but Alcoa doesn't want to use them because they involve too much manpower.

"If they were really serious about creating jobs in the South-West they would use the more effective method."

Mr Reading said the group was worried by the Worsley project because the partners had not been prepared to reveal any plans.

He said that the Worsley smelter would be built at the edge of the Wellington catchment area.

Fluoride fallout would kill big areas of sensitive redgum forests, aggravating a salinity problem at the big irrigation dam.

"We already have a problem with salt levels in the irrigation water from Wellington weir," he said.

"Either of these sites would cause a lot of trouble and the Government may be planning to approve both of them."

Mr Reading said he was convinced the Environmental Protection Authority was being emasculated by the State Government to make way for the smelters.

He did not believe the plans would stand up to a thorough and independent EPA investigation.

The Harvey Shire Council has adopted a cautious approach to the prospect of industrial development that could transform the district.

The council will run a poll or referendum of local electors before it makes a decision.

The Bunbury City Council is much more enthusiastic.

The Mayor, Mr Pat Usher, says industrial development is the key to improving facilities in the city.

CSO: 5000

## AUSTRALIA

### HUNTER VALLEY SHELTER WILL POLLUTE, COST TAXPAYERS

Sydney THE SYDNEY MORNING HERALD in English 12 Nov 80 p 7

[Article by Graham Williams: "The Power Politics Behind Making Aluminium"]

[Excerpts] The three planned aluminium smelters for the Hunter Valley will not be the financial or the employment bonanza that many think. In fact, according to a Newcastle economist, we'll be paying them an annual subsidy of more than \$100 million.

The three aluminium smelters in the Hunter Valley will not only pollute the environment but will also, according to Dr Howard Dick, cost us more than \$100 million a year in subsidies for the next 25 years.

This amounts, says Dr Dick, to an annual subsidy of more than \$50,000 for each of the 2,500 employees--or more than double the average wages to be paid.

"As a job-creation scheme this is crazy," said Dr Dick, senior lecturer in economics at Newcastle University.

"It doesn't make sense environmentally or economically."

The smelters have aroused fierce protests from local vigneron, farmers and ecology groups claiming they will pollute the environment with fluoride emissions.

But Dr Dick said that on purely economical grounds the smelters could not be justified because of the "ridiculously low cost" at which they will buy electricity.

The State Government and the NSW Electricity Commission have refused to disclose the price at which electricity will be sold to the smelters. But Dr Dick has based his calculations on the generally agreed estimate that the aluminium smelters will buy their power at 1.2 cents per kilowatt hour (compared with the 4 cents charged home users).

He said that, in order to eliminate the cheap power subsidy of between \$100 and \$126 million a year, the price of electricity to the smelters would have to be increased about 250 per cent.

"The new power station built for the aluminium companies will be financed mainly by higher prices charged to all electricity consumers in the State," he said.

"Since the Electricity Commission also borrows from the State Treasury at rates of 5 to 6 per cent, taxpayers will also contribute.

"But because power is being sold to aluminium companies for a fraction of its worth, the people of the State will suffer lower incomes and both State and Federal Governments will forfeit revenues."

The energy-eating smelters (aluminium is often called "packaged energy") have been attracted to Australia by State Governments vying with one another to provide cheap power.

Smelters are moving into Victoria, Queensland and Western Australia in a big way--nine in all are planned--because of the power deals they have been given or promised.

Dr Dick argues not only that we are giving amazing subsidies to these huge corporations but that, because they are capital-intensive, few jobs will be created.

Each job in an aluminium smelter in the Hunter Valley will require an outlay of \$750,000.

Dr Dick said the alleged employment-generating effects of the smelters had been their only economic justification, but this too was highly suspect.

"The \$2,000 million to build three smelters and half a giant power station will create about 2,500 jobs--600 of them in the power station.

"In addition to a huge annual subsidy of more than \$50,000 per employee, hardly anything will be done for the huge number of young and unskilled workers.

"Many of the jobs to be created will be filled from overseas and by poaching skilled labour from other local industries.

"We would all be better off if the Government cancelled construction of Bayswater power station, exported the coal and used the funds instead for housing, urban amenities and rural aid.

"This would create much greater employment and raise the standard of living instead of reducing it."

CSO: 5000

AUSTRALIA

**SEC ADMITS NEWPORT STATION WILL BE POLLUTER**

**Oil Burning Cited**

Melbourne THE AGE in English 11 Nov 80 p 3

(Article by Philip Chubb and Rod Usher)

[Excerpts] The State Electricity Commission has admitted that it is highly unlikely that it will be able to meet the pollution control standards set for Newport power station.

Even if the SEC could meet the standards set, the Environment Protection Authority would not know. Its monitoring programme for the project may not be ready until two years after the station starts up, in about two weeks.

Internal SEC documents show that Newport D will have to burn oil rather than natural gas for as many as 165 days each year. The EPA licence allows for oil burning on 96 days each year.

The pollution problems with burning oil are much greater than with gas, particularly in relation to discharges of sulphur, carbon monoxide, smoke and other particles.

One of the internal SEC documents says: "Some problems are foreseen with emission levels with oil firing."

Despite this a memo from the SEC's principal design engineer (power to the principal projects engineer (power) says... "The fuel oil system must be kept ready for immediate use at all times the generating plant is available for operation or actually in use." This is because gas supplies may be "curtailed."

The documents say that the SEC sees few problems with gas firing, though they state that the contractor who built the station's boiler "has only supplied guarantees for levels of oxides of nitrogen emission." The EPA licences for Newport involve several pollutants.

For oil burning, however, the SEC admits problems:

--For carbon monoxide, the contractor first estimated that the licence figure would be "grossly exceeded." But the SEC says it should be able to correct this problem;

--For sulphur trioxide, a very diluted form of sulphuric acid sometimes known as acid rain, levels could be "considerably above the licence values." The documents say "the amount produced depends on a number of unknowns";

--Solid air impurities: the licence value is "unlikely to be exceeded" but "formation of soot or grit could cause the licence value to be exceeded."

The reasons given for the unexpectedly high use of oil are: "Limitations of the capacity of the gas processing plant..."

shortages could occur on any day Newport is required to operate should breakdowns occur in the supplier's facilities...gas shortages could also result from changes at short notice in the operating regime of the station brought about by breakdowns in the SEC system." (paragraphing as published)

Because of these problems, the document says, gas "curtailment" could occur up to 130 days a year during the initial stages of the gas supply contract "and subsequently up to 165 days pa."

The State Opposition's spokesman on minerals and energy, Mr Amos, said yesterday: "This information once again demonstrates the correctness of our call for an overall energy authority and an inquiry into the SEC. The commission has not been subject to the kind of scrutiny it ought to have been. It takes decisions in isolation, and these have been bad."

The SEC documents seen by INSIGHT say that the need to shut down Newport "will occur very rarely, if ever." However, an EPA document on Newport says: "The SEC shall undertake to plan and carry out the operation of the 500 megawatt station with full recognition that it will have to shut down on several days each year, perhaps as many as 15 to 28 days or more, to prevent a possible build-up of precursors to photochemical smog."

Though the SEC documents show that certain emission levels are likely to be exceeded, the EPA does not appear to be in a position to exercise its right to tell the SEC to shut down the Newport.

INSIGHT asked the acting chairman of the EPA, Mr John Alder, how the authority would be able to tell the SEC to shut down Newport over the next two years without the "model" that the Melbourne Air-shed Study will provide. He said: "It remains to be seen; I can't express an opinion on that." He said existing EPA monitoring stations would provide some necessary information. "We will be flying by...We will be using our subjective judgment," he said.

Labor's environment spokesman, Mr Walker, said yesterday: "We will not know when the bad days are coming, and it is now obvious that there will be more of them. The monitoring capacity is at least two years off, but the pollution,

according to these SEC documents, will be worse than anything we expected because of the number of days Newport will have to run on oil.

"The SEC has quite deliberately misled the public and the Parliament, it is nothing short of institutional arrogance."

#### SEC Demurral

Melbourne THE AGE in English 13 Nov 80 p 3

[Excerpts] The chairman of the State Electricity Commission, Mr Trethowan, said yesterday that Newport power station would be operated "in strict conformity with the Environment Protection Authority licence conditions."

Mr Trethowan's statement said sophisticated equipment was installed in the power station "to continuously monitor chimney emissions. The EPA will have a continuous input of this information to satisfy itself that the station is always performing satisfactorily."

The Minister for Conservation, Mr Houghton, told Parliament yesterday that the SEC would have no problem meeting the EPA's pollution standards on emissions from Newport.

Mr Houghton said five pollution monitoring stations would be operating within 18 months. He said it worried him that they would not be in operation from later this month when Newport would begin to play its full part in supplying power.

But "it would give me a lot more worry if the SEC was not confident that their station design would obviate the problems," he said.

CSO: 5000

**CONSERVATIONIST LISTS MULTIPLE THREATS TO FOREST**

**Incompatible Uses**

Perth THE WEST AUSTRALIAN in English 6 Nov 80 p 19

[Text] It was fashionable to discuss multiple uses of the jarrah forest but many of the competing uses were incompatible with one another, the vice-president of the WA Conservation Council, Mr N. J. Halse, said last night.

He said that these competing demands made it essential for a substantial reserve to be given A-class status.

Mr Hale, who was speaking at a meeting of the environmental section of the Australian Institution of Engineers, warned that the forest as it existed today was threatened by uses that could destroy it.

Mining leases covered the entire northern jarrah, he said. The only limitations at present were the long period over which mining would take place and the restriction of mining to economic bauxite areas.

Activities such as quarrying for gravel and rock affected other parts of the forest.

Mr Halse said that, although the forest catchment area served a dual purpose, the continued construction of dams and their associated works also affected substantial areas.

Power lines caused disturbances in quite big areas.

Recreational use, as it became more intensive, would produce damage faster than it could be restored by natural processes.

Different

"Although the Forests Department manages the forest to maintain it in a healthy and productive state the management programme makes it different from a natural forest," Mr Halse said.

"Timber felling removes big and unproductive trees.

"Frequent burning is likely to alter the flora.

"Timber removal accelerates erosion processes.

"Although a forest is maintained for multiple uses it does not preserve the characteristics of a natural or virgin forest."

Mr Halse, said that WA, like the rest of Australia, was pitifully short of forests.

Scarcity.

A good case could be made for the preservation of forest areas in WA solely on the grounds of scarcity.

The A-class reserve proposed by the conservation council was in the Darling Range, between Dwellingup and Collie.

"The proposal for a reserve in the northern jarrah forest arose as a result of its seriously deteriorating status in recent years," Mr Halse said.

Amateur conservation lobbyists still hoped to preserve virtually all the jarrah forests, but events of the past few years--particularly in relation to bauxite mining had destroyed this hope, Mr Halse said.

#### Government Response

Perth THE WEST AUSTRALIAN in English 8 Nov 80 p 41

[Exempts] It is becoming fashionable for people, including environmentalists, to criticise, without proposing viable alternatives, according to the Minister for Forests, Mr Wordsworth.

He said that the Forests Department had long recognised the conflicts of use in the State forests.

It aimed to minimise the conflicts rather than isolate the forests from the community.

Mr Wordsworth was replying to claims by the vice-president of the WA Conservation Council, Mr N. J. Halse, on Wednesday that competing uses of the jarrah forest were incompatible.

The department found that flora growth could be improved with planned burning and that managed timber production did not cause a significant erosion problem in the jarrah forests.

"The impact on the forests of the activities mentioned by Mr Halse (power lines, mining quarrying, dams, recreation and timber removal) were recognised by the

department. It sought and received co-operation from the various interests involved to minimise the impact."

He said that 20 per cent of 200,000 hectares of State forests in the vicinity of Perth had been set aside for conservation and recreation purposes.

This compared more than favourably with worldwide practice.

CSO: 5000

## AUSTRALIA

### CHANGES TO EPA APPROVED BY WEST GOVERNMENT

Perth THE WEST AUSTRALIAN in English 12 Nov 80 pp 1, 11

[Article by E. A. Barker]

[Excerpts] The WA Government confirmed yesterday that it planned to remove Mr Colin Porter from the Environmental Protection Authority.

Mr Porter (49) has been director of the Department of Conservation and Environment and chairman of the EPA since March 1978.

The Government gave notice yesterday of legislation under which the director will no longer be the chairman or a member of the EPA.

In an associated move, Mr Porter will no longer have voting rights on the 16-member Conservation and Environment Council. But he will be able to attend in an advisory capacity.

The Government's proposed amendments to the Environmental Protection Act were approved at a meeting of the joint Government parties yesterday.

But there were some critics in the party room.

A former minister for Conservation and Environment, Mr G. C. MacKinnon, said later that he could see no reason for the changes.

He thought the EPA had been working effectively.

"It seems to me that the people were reasonably happy with the EPA as an independent body that looked after their interests," he said. "I can't for the life of me see that these changes are necessary."

The Leader of the Opposition, Mr Davies, said that the decision on Mr Porter was a deliberate attempt to weaken the EPA.

There was no doubt that the director's role had been changed because the EPA was not telling the Government what it wanted to hear. The Government wanted to get more palatable environmental advice.

## Hostile

Mr Davies said he was certain that the proposed changes would have been even more severe if leaks about them had not provoked such a hostile response.

Mr Porter said yesterday that he intended to continue doing his job till something happened to make him reconsider his position.

Mr O'Connor said that the proposed changes would considerably strengthen the EPA as an independent advisory body and WA's leading watchdog on environmental matters.

Under the Act, the EPA is made up of three members: the director of the department (Mr Porter), another member with knowledge in environmental matters (Professor A. Main of the University of WA) and a third person (Mr P. Adams, QC).

Mr O'Connor said that under the proposed changes no member of the EPA would have an obligation to the government of the day because none would be a public servant.

The EPA would be able to make impartial recommendations because it would be able to stand aside from the pressures of vested interests in its deliberations.

## Features

Mr O'Connor said the main features of the amendments were:

--The EPA would remain a three-member body responsible for the work of the department. It would include private individuals with expertise in environmental and legal matters.

--The EPA would have the right to deal with any department, but must keep the Minister for Conservation and the Environment advised of its activities to ensure that he was fully informed.

--Ministers of other portfolios would still be required to advise the EPA of any projects which might have a detrimental effect on the environment. But they must work through the Minister of Conservation and Environment, who was in turn required to tell the EPA and seek its recommendations.

--The streamlining of the EPA's administrative procedures in considering issues and making recommendations.

Mr O'Connor said that the vacancy on the Conservation and Environment Council resulting from the director's not being a voting member could be filled by a member of the public.

This could result in an increase from two to three in public representation on this body.

Mr O'Connor is expected to explain details of the Bill in the Legislative Assembly tomorrow.

#### Fears

Environmentalists fear that the changes will clear the way for the Government to appoint to the EPA a chairman, and perhaps other members, who are in tune with the Government's thinking on environmental matters.

CSO: 5000

## DEVELOPMENT THREATENS WILDLIFE HABITATS

Melbourne THE AGE in English 13 Nov 80 p 21

[Article by Peter Roberts: "Habitat of Endangered Species Unprotected"]

[Text]

Victorian laws only partly protect endangered wildlife from extinction.

Anyone caught in possession of an endangered bird or animal faces a \$5000 fine, but it is not illegal to deprive those same creatures of their habitat.

A senior zoologist at La Trobe University, Mr Peter Rawlinson, predicts a grim future for endangered species unless the fragile ecosystems they need for survival are legally protected. "We have draconian penalties now for people capturing native animals," Mr Rawlinson said yesterday. "But there is nothing stopping you putting a bulldozer through the habitat of these animals."

This happened early this year when a landowner adjoining the Yellingbo State Faunal Reserve cleared land which housed 16 bower-bird nests. Only about 200 of the honeyeaters are left. The Minister for Conservation, Mr Houghton, said yesterday the clearing operation highlighted a chink in the State's wildlife protection armor; the Government had no power to protect the land. He has called for a report from his Ministry on possible changes to the Wildlife Act.

"It is necessary to have some measure of protection for endangered species on private land," Mr Houghton said. "One of the best weapons is co-operation with the landowners involved." However such co-operation had not

worked at Yellingbo where the landowner had an unwritten agreement with the Government not to clear the bush.

"It is all very well to rely on goodwill, but in terms of wildlife conservation, it won't work," Mr Rawlinson said. "Ultimately, there has to be a law which says habitat is protected."

## Emblem

Mr Rawlinson said the honeyeater, the State's bird emblem, had problems similar to other endangered species whose habitat was under threat. These species include:

• The leadbeater's possum, which nests in the hollow trunks of mature mountain ash. Most of the possum's habitat, including Melbourne's water catchments, is threatened by logging and clear-felling work. The possum's problem is acute because so much of the forest was destroyed by fires in 1939 and the re-growth is unsuitable for possum nests.

• The orange bellied parrot, which has its main wintering ground at Point Wilson near Geelong. The ICI company is going ahead with plans to build a petrochemical works nearby. Ornithologists and the Ministry for Conservation want the works moved because of potential effects on the parrot, only 150 of which survive.

• The Baw Baw frog, Victoria's only endangered amphibian, is found mainly around the Baw Baw ski village. Development of new lodges and ski slopes is said to threaten the future of the frog.

"All over Victoria the habitat of endangered species is under threat and we are finding there is nothing we can do about it," Mr Rawlinson said. He said the 127 State fauna reserves covered only a small fraction of the habitat used by endangered wildlife.

The Australian Conservation Foundation has also written to the Premier, Mr Hamer, asking him to act. According to the ACF, the Government has failed to live up to the provisions of the act, which led to the formation of the Ministry for Conservation in 1972. The act said that the Ministry included the protection and maintenance of wildlife habitat.

Mr Syd Cowling, an assistant director of the Fisheries and Wildlife Division, said the Wildlife Act provided adequate protection for endangered species. Having, he said, the division did not have the resources to provide management back-up, advice and research on wildlife problems. "We get requests from farmers all the time asking for advice in managing wildlife," Mr Cowling said. "We haven't got the troops to help them."

## LOGGING PLAN THREATENS WATER SUPPLY, WILDLIFE

Melbourne THE AGE in English 5 Nov 80 p 16

[Article by Paul Robinson]

[Text]

Victorian sawmillers are campaigning to log Board of Works catchment areas.

The Forest Industries Resource Management Group has produced a report which claims that harvesting mountain ash in catchments close to Melbourne would provide up to \$7 million in royalties to the State Government.

Profits to the group, which comprises more than 200 Victorian wood fibre processing companies, has been estimated at up to \$42 million a year. The report claims that logging the catchments would provide at least 1500 new jobs.

The author of the report, Dr Frank Moulds, said that carefully managed logging of the Wallaby Creek, O'Shannassy and Maroondah catchments would not threaten the quality or quantity of Melbourne's water supply if management practices recommended by the Forestry Commission were used.

The catchment area contains a large majority of the remaining stands of mature mountain ash in the State. Mountain ash is recognised as one of the tallest hardwoods in the world.

The area is also the home of the Leadbeaters possum, which was thought to be extinct until discovered there in 1961.

A senior zoology lecturer at La Trobe University, Mr Peter Rawlinson, said yesterday that

logging the area would "eliminate the Leadbeater". He said that two reports released this year, co-ordinated by the National Herbarium and the Fisheries and Wildlife Department, recommended that to protect the mountain ash and the Leadbeaters possum, the area should not be logged.

The FIRIM group said that several State Government reports had recommended that the board's catchments be opened up to include logging and public access.

The reports are those of the all-party State Development Committee of 1969 and 1960, the all-party Public Works Committee Inquiry of 1964 to 1966 and the Land Conservation Council in 1977.

The board was due to release a hydrological report on the catchments in June last year but the final draft will not be completed until December.

The chairman of the board, Mr Alan Croxford, said yesterday that the FIRIM report promoted the self-interest of loggers and sawmillers. Mr Croxford said the board would "not be stampeded into making a decision" until the results of its own hydrological survey was completed.

The Deputy Premier, Mr Thompson, said yesterday a similar conflict of interest had caused "heat" during the 1960s. He said he had not seen the FIRIM report and was waiting for the board's hydrological investigation to be released.

CSO: 5000

EDITORIAL HITS ENVIRONMENTAL IMPACT OF STATE ROAD PLAN

Perth THE WEST AUSTRALIAN in English 5 Nov 80 p 6

[Editorial: "Highway Plans"]

[Text] The draft report prepared by a technical committee as part of the western suburbs study and released by the State Government yesterday is a disappointing document.

If it constitutes a regional transport strategy--a point already under challenge--it is a narrow and unimaginative one.

In the light of the report, it is hardly surprising that the State Government has deferred a decision on the Metropolitan Region Planning Authority proposal for Servetus Street to become part of a major north-south highway. Indeed, it would have been better had the Government directed the MRPA to make a fresh start.

The future of Servetus Street has become so much a controversial focal point of the north-south highway concept that there is ground for questioning whether planning authorities have been able to look far enough beyond it and to consider fully questions of far greater importance to the community as a whole. Pressure applied over Servetus Street--both by homeowners directly affected and by those who would rather see a highway there than anywhere else--has fogged the overall picture.

The report reinforces suspicion that, so far, planning for the highway link has been dominated by the need to meet the demands of industry quickly and cheaply and to keep residential disruption to an absolute minimum. These are important considerations, of course, but they should not cloud broader community priorities.

More thought must be paid to the environment, to the irreparable damage that would be done by developing a major arterial road too close to the coast and by taking it across Bold Park and round the base of Reabold Hill. This section of the proposal, at least, should be taken no further than where it rests at the moment--lines on a piece of paper.

Beyond the Boulevard, more environmental damage is planned, including truncating the Wembley Golf Course. This is another section which demands more thought.

As laid down in the 1960s, it may be the only route to take but we can afford the time for another thorough look.

As for Servetus Street, the report argues that some upgrading will be necessary, irrespective of the role the road plays in highway development. But that need, of itself, is no rationale for taking the upgrading process one step further than absolutely necessary. As with Servetus Street, so with West Coast Highway: The emphasis should be on finding ways to limit their future use, not on encouraging the traffic flow they carry. Brockway Road is by no means the perfect solution but it, Davies Road or Selby Street look to be better highway options than Servetus Street.

There is no doubt that Perth faces unpalatable decisions in meeting the need for a north-south highway through the western suburbs. But the decision-making process calls for more searching examinations than have been made so far.

CSO: 5000

## BRIEFS

**FOREST PRESERVATION FUND**--A fighting fund to save what has been described as the best-preserved tract of rain forest in Australia was launched yesterday. The Cape Tribulation Rainforest Fund wants to raise more than \$150,000 so it can buy 200 hectares of rain forest. It fears the land will fall into the hands of developers, ruining the ecology of the area between the Daintree and Bloomfield rivers. The region is on the coast between Cairns and Cooktown. Fund secretary, Mr Bill Sokolich, said \$10,000 had been pledged. Mr Sokolich said it would be impossible to buy the entire area. But the 200 hectares would complement a national park to be dedicated in the highland rain forest. [Text] [Brisbane THE COURIER-MAIL in English 31 Oct 80 p 10]

**DDT CONTROLS**--The expansion of cotton growing in NSW could be restricted by controls on DDT. In recent years cotton production has become one of the major industries of inland NSW. It has extended from the Namoi River Valley at Narrabri and Wee Waa and is now a major industry on the Barwon River at Mores and along the Macquarie River at Narromine. A report issued yesterday by the Minister for Planning and Environment, Mr Bedford, recommended restrictions on the use of DDT in the Namoi cotton-growing areas. Mr Bedford said the report recognised the need for pest control in commercial cotton production. However, he said, it was also necessary to consider the environmental consequences of using DDT and other pesticides. The use of pesticides could cause adverse effects on biological systems and as a result of the study recommendations had been made on the use of pesticides. The report said that aerial spraying of pesticides should not be made in conditions likely to allow drift. [By Joseph Glascott] [Text] [Sydney THE SYDNEY MORNING HERALD in English 4 Nov 80 p 12]

**SMEETER EMISSIONS**--A State Government report has warned against liberal emission standards for Alcoa's Portland smelter. The Environment Protection Authority report recommends that the company smelter should be licensed to a limit of 1.0 kilogram of fluoride per tonne of aluminium produced--the United States standard. The EPA Report, by the senior air quality control officer, Mr P. J. Ramsay, is the first official EPA indication of the fluoride emission level it would tolerate before issuing the licence. However in the foreword to the report EPA Chairman, Mr Jack Fraser, said that although the authority acknowledged the recommendations contained in the report, it had not adopted them "at this time." The report was tabled in State Parliament by the Opposition spokesman on the Environment, Mr Walker, during a nine-hour debate on a bill to ratify an agreement between Alcoa and the State Government. The debate [as published]

Mr Walker said the Government should act immediately on emission control standards rather than allow the Alcoa complex to go ahead, then wait for adverse environmental effects to become apparent. [Excerpt] [Melbourne THE AGE in English 7 Nov 80 p 14]

**MERCURY IN FISH**--The National Health and Medical Research Council was re-examining its limits on mercury in fish, the executive officer of the WA branch of the Australian Fishing Council, Mr G. Stewart, said yesterday. The existing standard was 0.5 milligrams per kilo. Mr Stewart said that if this was continued it could cripple the Australian fishing industry. It would also be difficult to enforce because about half of all fish eaten in Australia was caught privately. Most of the mercury found in Australian fish occurred naturally in the environment. No symptoms of mercury poisoning had ever been recorded in Australia and no Australian was likely to eat enough fish to be affected by its mercury content. The proposed law would have imposed severe penalties on those selling fish with mercury levels exceeding 0.5 mg/kg. The report showed that fish was less than one percent of the total Australian diet. Its report said that mercury concentrations in Australian foods other than fish were relatively very low, generally averaging little more than 0.002 mg/kg. The highest total mercury concentrations in Australian fish were recorded in various shark species. Of the non-shark species, gemfish, ling, snapper, flathead and blue grenadier contained the highest average and maximum concentrations. [Excerpts] [Perth THE WEST AUSTRALIAN in English 7 Nov 80 p 33]

**COASTAL CONSERVATION**--Sydney--A group of conservationists and campaigners for Aboriginal land rights plan to highlight their causes by walking the NSW coast from near the Queensland border to Sydney. A spokesman, Mr Paul Blainey, said that the 13 walkers hoped to stimulate public awareness of the need to preserve the coastline from further development. On the way the party would involve local conservation groups in surveys of present environments, check out significant Aboriginal sites and seek signatures for a petition to halt sand-mining operations. [Text] [Perth THE WEST AUSTRALIAN in English 11 Nov 80 p 23]

**MINING BAN**--Mining would be prohibited on Moreton Island under a Labor government, the Opposition Leader, Mr Casey, said yesterday. And there would be no drilling or mining in the Great Barrier Reef region which would become a marine park. Mr Casey condemned the State Government for recently renewing some Moreton Island mining leases. Labor policy for mining sought maximum Australian ownership in ventures, the honoring of all existing mineral agreements and contracts including those for Mary Kathleen uranium, and higher royalties. The Mining Act would be reviewed to tighten provisions on authorities to prospect and on mining leases, and a study would be made of the Bowen Basin to determine if a steel works could be built there. An overseas-owned-land register would be established to record such transactions on a local authority basis. Companies entering major development agreements would be required to register in Queensland and have a majority of Australian directors. [Excerpt] [Brisbane THE COURIER-MAIL in English 12 Nov 80 p 14]

**SILT STUDY FUNDS**--The NSW Department of Public Works has allocated a further \$150,000 to continue its studies on siltation at Port Hacking. The deputy Premier and Minister for Public Works, Mr Ferguson, made the announcement yesterday and released a progress report on studies so far. The additional funds will enable further studies to be undertaken at Port Hacking between Lilli Pilli and Bundeena. Mr. Ferguson said Port Hacking has enormous potential for recreational use by residents of Sydney's south and south-western suburbs, if a solution could be found to the serious siltation problem. Problems caused by siltation in the port included the high cost of maintenance dredging of navigation channels and congested boating conditions. The progress report listed three options for improving the waterway: Maintenance dredging of the navigation channel. Commercial dredging on a large scale. Allowing the river to find its natural level. The report favoured letting the river find its natural level. While this could make the present ferry service inoperative, it would still be cheaper to operate a special shallow-draught vessel. [Text] [Sydney THE SYDNEY MORNING HERALD in English 6 Nov 80 p 9]

**LAND-CLEARING DEBATE**--The National Party yesterday failed in a last-ditch attempt to oppose amendments to the Country Areas Water Supply Amendment Act. The Country Areas Water Supply Amendment Bill was passed in the Legislative Assembly yesterday when the Opposition voted with the Government to give it a third reading. Land-clearing bans exist in some areas affected by a high salinity level. The NP opposed a provision in the legislation which gives the Public Works Department officers the power to enter farmers' properties without permission and alleged that restrictions on land-clearing had imposed a sectional tax on farming communities. [Excerpt] [Perth THE WEST AUSTRALIAN in English 12 Nov 80 p 9]

CSO: 5000

CHLORAL POLLUTION, ITS DEGRADATION IN SOIL STUDIED

Beijing TURANG XUEBAO (ACTA PEDOLOGICA SINCA) in Chinese Vol 17 No 3, Aug 80  
pp 217-226

[Article by Xu Ruiwei [1776 3843 5633], Qian Wenheng [6929 2429 1854],  
Sun Hanzhong [1327 3352 0022], and Zhao Jiahua [6392 1367 7520] of the Nanjing  
Pedology Institute of the Chinese Academy of Sciences: "Chloral Pollution and  
Its Degradation in Soil"; Rong Jie [2051 2212], Li Deping [2621 1795 1627],  
Jin Wei [7246 0251] and An Qiong [1344 8825] participated in the experimental  
work]

[Excerpts] Chloral is an important organic synthetic material and it is widely used by the farm chemicals industry and factories are distributed throughout the nation. Because of the inappropriate disposing of the three wastes, the environment has been frequently polluted. In 1974, over 60,000 mu of wheat were damaged in the Hangu Ward of Tianjin and over 20,000 mu produced no harvests. The incident was serious. It was caused by pollution of the source of irrigation water of the Suyun River by chloral containing waste water.<sup>1</sup> Similar happenings also occurred in Beijing, Xian and Zhengzhou.<sup>2,3</sup> Many commune-operated factories in Jiangsu, Zhejiang and Yunan have utilized waste sulfuric acid containing chloral to produce calcium superphosphate fertilizer and have caused damage to farmland. In Kunming, an incident of chloral polluting the source of drinking water and causing damage to people's health even occurred. This is a type of pollution by our nation's farm chemical industry that causes relatively great damage.

The chemical properties of chloral are unstable. It was discovered in the surveys of farmland pollution that chloral in the polluted soil dissipates relatively fast. But even when all the chloral in the soil has dissipated, within a relatively long time, crops planted as supplementary crops in the soil still show signs of poisoning. It can thus be seen that a clear explanation of the patterns of conversion of chloral in soil has obvious practical significance. In recent years, some studies have been conducted in our nation on the signs of poisoning by chloral, monitoring and measurement methods, and standards of water quality.<sup>1-5</sup> There are more studies being conducted abroad in chloral chemistry, techniques of analysis and determination, plant physiology and water pollution but there have been few reports on soil pollution by chloral. This article studies the activities of chloral in the soil and the major conversion products and the cause of continued damage to crops after dissipation of chloral has been determined. The article also discusses the degradation mechanism of chloral in the soil.

## I. Experimental Materials and Method

Soil sample: The soils for testing were salinized meadow soil (from the Hangu Ward in Tianjin), paddy soil (from Guangzhou), and red earth (from Jinxian in Jiangxi).

### (I) Degradation Experiment

1. Laboratory incubation experiment: Fifty grams of wind dried soil (sifted through a 20-hole sieve) was placed in a 100-milliliter triangular flask and a definite quantity of chloral and water solution were added to obtain a specific experimental concentration (25 and 800 milligram/jin of soil). The dampness of the soil sample was maintained at the same level as the moisture content in the field. Incubation was performed in a thermostatic chamber (20°C and 32°C). Samples were taken at regular intervals (three repetitions each time). The contents of chloral and its major degradation products were measured at different times. Sterilized soil was used for parallel contrast experiment.

2. Pot incubation in thermostatic chamber and pot planted wheat experiment: Each pot contained 1.5 jin of soil. Chloral solution was added to the pre-determined concentration. Wheat was then sown at different periods of degradation (the 1st, 5th, 20th, 50th, 70th and 100th day). The contents of chloral and its major degradation products in the soil at the time of sowing were measured and the growth situation of wheat was recorded at the same time.

### (II) Method of Analysis

1. Gas-chromatography of chloral in soils. Procedures of extraction: A sample of 50 grams of soil was used and extraction was performed by shaking the water and soil mixture of 1:1 ratio; 10 milliliters of water phase mixture and 15 milliliters of petroleum ether: ether = 2:1 mixed solvent for extraction 3 times. The extracted liquid was combined with and dehydrated by 5 grams of mercuric sodium sulphate, the volume was fixed and prepared for chromatographic measurements.

Chromatographic conditions: The SP 2305 model gas chromatograph with a deuterium-scandium electron capturing and detecting device and 10 percent silica oil No 1/acid washed 101 white carrier body was used. The inner diameter was 4 millimeters, the glass column was 2 meters long, the entry sample temperature was 160°C, the column temperature was 100°C, the detector temperature was 160°C. The lowest concentration detected by this method was 0.01 milligram/jin of soil.

2. Determination of Trichloroacetic acid in the soil by head space chromatography.<sup>6</sup> The soil sample was extracted by shaking in a water solution of a ratio of 1:1. One milliliter of water sample was siphoned into a 25 milliliter flask with a small opening, then 1 milliliter of concentrated sulphuric acid was added. A silica-rubber stopper was used to seal the opening. Nitrogen gas was then piped into the flask to vacate the air, then a syringe was used to inject through the silica-rubber stopper 0.1 milliliter of methyl alcohol and then the flask was set in 60°C water bath for esterification in thermostatic

conditions for 3 hours. Then a syringe was used to extract 0.25 milliliter of vapor from above the surface of the solution in the flask. Chromatographic entry of sample, chromatographic conditions and instruments were all the same as those used in determining chloral. The lowest detected concentration by this method was 0.01 milligram/jin of soil.

3. Products of degradation of chloral-joint analysis of trichloroacetic acid by chromatography-mass spectroscopy. This was conducted on the MS50 model chromatograph-mass spectroscope. We took 800 milligrams/jin of soil containing chloral and 50 grams of soil sample incubated for 10 days in a pot for extraction in distilled water of 50 milliliters. The aqueous sample was then treated for esterification by the head space chromatographic method for trichloroacetic acid. Then we used a syringe to siphon 1 milliliter of vapor sample above the surface of the liquid for chromatographic-mass spectroscopic measurements.

## II. Experimental Results and Discussion

### (I) Activity of Chloral in the Soil

The content of chloral in the three test soils varies with time. Chloral can dissipate relatively quickly in different soils, and it dissipates the fastest in the salinized meadow soil of Tianjin. Within 2 days, it dissipates almost completely. The next fastest occurs in the paddy soil of Guangzhou and the slowest in red soil of Jiangxi. The rate of dissipation in a 10-day period in the latter 2 types of soils was 99 and 80 percent, respectively.

Other environmental factors of the soil also affect the rate of dissipation of chloral. When the temperature of the soil rises, the rate of dissipation quickens. The retention period (time needed for 99 percent to dissipate) of chloral in the salinized meadow soil of Tianjin was 24 hours at 32°C and 48 hours at 20°C. When the initial concentration of chloral in the soil rises to 800 milligrams/jin of soil, dissipation at the beginning is slower but the process hastens after 48 hours.

### (II) Major Products of Conversion of Chloral in the Soil

1. Determination of the products of conversion. When using the chromatographic method to quantitatively observe the dissipation activities of chloral in the soil, it was discovered that soil containing chloral and incubated showed a peak at retention time 2'07" on the chromatogram not seen on the chromatogram of the original soil. As the time of incubation increased, the chloral peak at 1'05" dropped and the peak at 2'07" increased. The increase and decrease of the two peaks were closely related. The chromatographic retention time measurements preliminarily showed that the peak was the same as that of the sample of trichloroacetic acid (abbreviated TCA). Since trichloroacetic acid easily produces esters, the derivative chromatographic retention time measurement method was used as a test. The liquid extract of polluted soil was subjected to esterification in methyl alcohol and determined by head space chromatography. The experimental results showed that the retention time of the chromatographic peak of

polluted soil after esterification was exactly the same as that of the peak of the esters of the sample of trichloroacetic acid. Joint analysis by gas chromatography-mass spectroscopy was used to further analyze and determine the unknown peak formed in the chromatogram of polluted soil. The results showed that the characteristics of the mass spectrogram of the derivatives of esterification in the undetermined portion separated by gas chromatography of polluted soil were consistent with the characteristics of the mass spectrogram of the sample of trichloroacetic acid and the documented standard mass spectrogram. It can thus be concluded that chloral in the soil was converted to trichloroacetic acid in the process of degradation.

2. Activity of the products of conversion--trichloroacetic acid in the soil. The salinized meadow soil of Tianjin and red earth of Jinxian of Jiangxi are two soils that have relatively great differences in their physical, chemical and microbiological characteristics. The activities and processes of the conversion of chloral into trichloroacetic acid in these two soil samples were observed. As the amount of chloral in the soil reduced, 0.62 milligram/jin of soil of trichloroacetic acid was detected in the salinized meadow soil of Tianjin in the fourth hour. On the fourth day, the highest value was reached (about 76 percent of the initial concentration of chloral) and then it gradually lessened. Dissipation occurred about the 70th day. Trichloroacetic acid was not detected on the fourth hour in red earth of Jiangxi, but 0.12 milligram/jin of soil of trichloroacetic acid was detected in the 12th hour, and the highest value was reached on the 9th day (about 56 percent of the initial concentration of chloral), and dissipation occurred about the 100th day. It can thus be seen that chloral can convert to trichloroacetic acid in different types of soils and the trend of dissipation is similar but the rate of dissipation and the rate of conversion are visibly different.

### (III) The Affect of Chloral and Its Product of Conversion--Trichloroacetic Acid Upon the Growth of Crops

Chloral is called a growth disorganizer in plant physiology. It can destroy the polar structure of the protoplasm of plant cells and differentiation, disorganizing cellular and nuclear division, forming diseased tissues and hindering normal growth. Experiments of potted plants show wheat is very sensitive to chloral. When the concentration is above 0.5 milligram/jin of soil, wheat plants become stunted and the leaves curl. The symptoms are visible. When the concentration is above 1.5 milligram/jin of soil, the yield is visibly affected. When the concentration is above 5 milligram/jin of soil, the leaf sheath increases in thickness after the wheat seedlings emerge from the soil, and most of the new leaves of the plants (the first true leaf) cannot emerge fully and gradually wilt. When the concentration in the irrigated water is above 5 milligram/liter, visible damage to paddy rice is caused. The results of the experiment of potted plants show the concentration of trichloroacetic acid that causes damage to wheat and the symptoms of poisoning thus caused are similar to those of chloral.<sup>8,9</sup>

Incubation and pot planting experiments show that wheat sown during different periods of degradation (the number of days of incubation after chloral has been added to the soil) will manifest visible differences in growth due to different contents of chloral and trichloroacetic acid in the soil.

Wheat sown on the first and the fifth days after degradation begins is most seriously damaged. But the direct cause of damage of the two are different. In the soil sown on the first day, the concentration of chloral is very high, and the damage is mainly caused by poisoning by chloral. In the soil sown on the fifth day, chloral has completely dissipated but damage to wheat is still very serious. The content of trichloroacetic acid in the soil is relatively high (11.0 milligram/jin of soil). Wheat sown on the 20th and the 50th days is damaged to gradually lesser degrees. At the time of sowing, the content of trichloroacetic acid in the soil is 4.5 and 1.5 milligrams/jin respectively. Wheat sown on the 70th and 100th days can grow normally. At the time, the concentration of trichloroacetic acid in the soil had already dropped to below 0.5 milligram/jin. This shows that after the chloral in the soil has dissipated, the degree of damage to wheat is closely related to the content of trichloroacetic acid. Damage is increased when the content of trichloroacetic acid is high. Only when the soil does not contain either chloral or trichloroacetic acid (or the concentration is below 0.5 milligram/jin), will the plants be able to grow normally. In the investigation of the incidence of pollution in Taixian, Jiangsu, we also detected the conversion product trichloroacetic acid in the soil. Supplementary crops planted in fields containing trichloroacetic acid will continue to show signs of poisoning. It can thus be seen that since trichloroacetic acid is strongly poisonous to crops, and it is retained in the soil for a definite period, it is the main cause that continues to damage crops for a relatively long time after chloral in the polluted soil has dissipated.

#### (IV) Discussion of the Mechanism of Degradation of Chloral in the Soil

1. The process of degradation of chloral. The C-C molecular bond of chloral molecules easily breaks because of the effect of attraction of the trichloromethyl electron. In air and sunlight, it can decompose by oxidation to  $\text{HC}$ ,  $\text{Cl}_2$ ,  $\text{CO}_2$  and  $\text{H}_2\text{O}$ . In alkaline solutions, it decomposes to chloroform and formic acid. The density of the electron cloud of the C-H bond on the aldehyde radical of the chloral molecule is relatively low and the oxidation ability is weaker than acetaldehyde. The latter can oxidize automatically in air while chloral can only oxidize to become trichloroacetic acid under the action of definite reagents (such as nitric acid, sodium hypochlorite). But the experimental results we obtained showed that the soil environment was different, and when chloral degraded in soil, trichloroacetic acid was formed first, not products of direct breaking of the C-C bond nor of dechlorination reactions.

Sterilized soil experiments showed the specificity of the degradation process of chloral in the soil environment was closely related to microorganisms. When chloral was added to sterilized soil, as long as the sterile environment was strictly maintained during the operations, trichloroacetic acid did not form at any time during the course of incubation. But when a solution of non-sterilized soil was inoculated into the sterile soil, trichloroacetic acid was formed. This shows trichloroacetic acid is formed by microorganic activity and is a product of biological oxidation.

2. Compositional characteristics of microorganisms in the soil and degradation. Chloral can convert to trichloroacetic acid in the three types of different soils. This shows that microorganisms that can produce such a reaction process exist in common in various types of soils. The amount of bacteria in the salinized meadow soil of Tianjin is higher than those in the red earth of Jiangxi by two numerical orders, and when compared, the former's constant of the rate of dissipation is visibly higher than the latter. It seems that these two are closely related and this shows that in microbiological composition, bacteria are more beneficial for this type of oxidation.

The pH values of the three types of soils tested differ relatively greatly. The constant of the rate of dissipation is higher when the pH value is higher. Considering the mechanism of biological degradation, an appropriate explanation would possibly be that the pH value has affected the characteristics of the microbiological domains, and the latter in turn determines the constant of the rate of dissipation.

3. The activation energy of the manifestation of dissipation reactions of chloral in the soil. According to the Arrhenius equation, the activation energy E can be calculated from the values of the constants  $k_1$  and  $k_2$  of the rates of two different temperatures ( $T_1$  and  $T_2$ ). The formula is:

$$\ln \frac{k_1}{k_2} = \frac{E}{R} \cdot \frac{\Delta T}{T_1 \times T_2}.$$

A sterilized soil sample and a nonsterilized soil sample of the salinized meadow soil of Tianjin were incubated under two different temperature conditions (20°C and 32°C). The values of k obtained from the  $\ln C - t$  curve were then used to compute the activation energy. The activation energy of the sterilized soil was 23 kilocalorie/mole. That of the nonsterilized soil was 5.8 kilocalorie/mole. The activation energies differed greatly, showing that the course of the reaction of dissipation of chloral under the two conditions were not the same. The constant of the rate of dissipation in sterilized soil changed greatly with temperature, manifesting a high activation energy, and was thus a typical chemical degradation. In nonsterilized soil, the changes in the constant of the rate of dissipation due to temperature changes were relatively small, manifesting a relatively low activation energy, and reflecting characteristics of biological degradation. Because participation of biological enzymes can change the speed of chemical reactions and reduce activation energy, chloral in the soil can easily oxidize to become trichloroacetic acid. The conversion rate to trichloroacetic acid in the degradation experiment is relatively high (56 and 76 percent). This shows that this type of biological oxidation reaction is the major reaction of dissipation of chloral in the soil. It can be seen in the activity curve of chloral and its product of conversion, trichloroacetic acid, that after all or most of the chloral in the soil has dissipated, the highest value of trichloroacetic acid is reached slightly later, showing that there may possibly be transient type products in the course of conversion. It can be imagined that a certain compound is first formed and then trichloroacetic acid is formed. Because the reaction rate of the latter is slower than

the former, the phenomenon in which chloral dissipates first and trichloroacetic acid is formed later occurs. This hypothesis is consistent with the hypothesis in enzymology, stating that the reactants first form a compound with enzymes and then the compound undergoes a reaction to produce the product.

#### (V) Treatment of Polluted Soil

There have already been many reports on the study of using trichloroacetic acid as a weeder in the search for the course of further dissipation of trichloroacetic acid in soils. The major processes are microbiological degradation and leaching. According to the physio-chemical properties and the biological degradation characteristics of chloral and trichloroacetic acid, measures that increase the activity of microorganisms in the soil (such as applying additional organic fertilizers and appropriately increasing the moisture content), irrigation and leaching and turning and plowing the soil for drying are all beneficial to revitalizing the soil. The results of experimental treatments in the laboratory are shown. The smaller the residual ratio the more effective the measure is indicated.

The results of the experiment show that the effects of the above measures upon hastening the degradation of chloral and trichloroacetic acid in the soil are very visible. According to the actual conditions of the polluted areas, a certain measure or many measures can be appropriately taken to hasten revitalization of the soil and reduce agricultural losses.

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THAILAND

DEGREE OF RIVER POLLUTION NOTED

Bangkok SIAM RAT in Thai 3 Oct 80 p 3

[Article: "A Survey Has Found That Many Rivers Are Not Fit For Use"]

[Text] Dr Phairot Ningsanon, the deputy undersecretary of the Ministry of Public Health, talked with a reporter about the results of a survey on river quality carried out by the Environmental Health Division of the Department of Health. From the survey of the quality of 30 rivers, it appears that the headwater areas of many of the major rivers can be classified good but after the rivers pass by many communities and industrial centers, the quality of the water progressively deteriorates and it becomes polluted. As for a major river such as the Chaophrya River, between Nakhon Sawan and Nonthaburi, most of the area is an agricultural area and there are only a few small industrial plants. The quality of the water is still good enough that the water can be used.

As for the area south of this, there are many large and small industrial plants and there are large communities within the Bangkok metropolitan area. The quality of the water deteriorates and this frequently gives rise to serious pollution during the dry season. Between the Phra Phutthayotfa Bridge and Samut Prakan, the quality of the water is so poor that there is almost no oxygen left in the water. Sometimes, capiodi pycal coliform bacteria and coliform bacteria are found and this water is not suitable for use.

Besides this, some major rivers such as the Tha Chin, Phetchaburi, Pranburi, Pasak and Bangpakong rivers are always polluted.

The deputy undersecretary of the Ministry of Public Health further stated that the Environmental Health Division surveyed the quality of the water in the areas of the water works and the other sources of water for the water works. For example, it tested reservoirs and wells. When the water was analyzed and the quality was compared to the World Health Organization's standards for water to be used as a supply of water, it was found that 80 percent was usable.

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## THAILAND

### MEASURES PROPOSED FOR FOREST PROTECTION

Bangkok DAO SIAM in Thai 4 Oct 80 pp 3, 12

[Article: "A Budget of 254 Million Baht Has Been Allotted For Combating Forest Destruction. Investors Who Have Invaded Doi Suthep Will Be Cleared Out and the Chinese Soldiers Along the Edge of the Forest In Chiang Dao Will Be Chased Out"]

[Text] The Ministry of Agriculture and Cooperatives has urgently discussed establishing bases to protect the forests in various areas in three regions and including this in the 1982 budget. A total budget of approximately 254 million baht has been established for this.

Mr Kangwan Thephatsadin Na Ayuthaya, the deputy undersecretary of the Ministry of Agriculture and Cooperatives, has disclosed that a target of 288 such operations bases has been set. A total of 235 bases covering an area of 30 million rai will be established in the northern forest areas in Tak, Phisanulok, Lambang, Chiang Mai, Chiang Rai and Phrae. A total of 15 bases covering an area of 2 million rai will be established in the northeastern forest areas in Udon Thani and Khon Kaen. In the south, 48 bases covering an area of 6 million rai will be established in Surat Thani, Songkhla and Pattani.

Besides this, a subcommittee meeting stipulated measures for suppressing forest destruction on Doi Suthep mountain in Chiang Mai. This was declared a national forest reserve in 1964. However, at present, hill tribesmen and government units are making use [of this forest] in both legal and illegal ways. Besides this, investors have gone in and bought large amounts of land or taken over ownership rights. If measures are not stipulated to handle this, this will indirectly lead to the destruction of the Doi Suthep forests.

Concerning this, at the meeting a resolution was introduced to present the matter to the cabinet in order to establish as policy that private individuals and government units will no longer be given permission to make use of this forest. As for private individuals and hill tribesmen who began using the forests and

living there prior to 1959, they will be allowed to continue living there until they die. As for people who entered this forest area after 1964, removing them from the area will be considered.

This conference also discussed ways to protect the forests that are being destroyed in Chiang Dao District in Chiang Mai Province. This is the headwater area of the Ping River. Most of the trees are hardwood or black-varnish trees. It appears that former Chinese nationalist soldiers, Muo hill tribesmen and refugee Ho Chinese have cut down trees in the area of Rin Luang, Nong Uk, Nong Khieow and Huai Kieng villages in Muang Na Commune, Chiang Dao District. A total of approximately 1,000 rai has been taken over.

At the conference, a resolution to carry out the following was passed: (1) B.K. 04 is to set measures for strictly controlling the former Chinese nationalist soldiers and ensuring that they stay in the areas that they have been given permission to live in. They must resolutely be kept from breaking the forestry laws. (2) As for other hill tribes, things must be carried out in accord with the resolution passed at the conference on hill tribes. (3) The A.A.P. must haul out the timber that has been seized by officials and take it and sell it outside Chiang Mai Province.

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## THAILAND

### MILITARY TO HAVE ROLE IN FOREST PROTECTION

Bangkok DAO SIAM in Thai 31 Oct 80 pp 3, 14

[Article: "Military to Cooperate In Opposing Forest Destruction"]

[Text] In the Military Operations office of the 1st Forward Cavalry Division at the Suriphong Camp in Nan Province, a conference was held concerning restoring the headwater forests in Nan Province. Major General Prachak Rotphothong, the commanding general of the 1st Forward Cavalry Division, served as chairman and opened the conference.

After the chairman called the conference to order and pointed out the agenda, in his capacity as the head of the Special Forest Destruction Suppression Center, Mr Kangwan Thephatsadin Na Ayuthaya, the deputy undersecretary of the Ministry of Agriculture and Cooperatives, discussed the policies and the areas of action. He stated that the center has a program to restore and protect the forests from destruction. It will try to protect the country's approximately 80 million rai of remaining forests.

To preserve the forests, a 3-year project has been implemented. This year, the center has established bases for suppressing forest destruction in 45 places throughout the country. In 1981 such bases will be established in another 45 places and in 1982 the remaining number of bases will be established in accord with the plans.

These bases will be composed of forestry officials, forestry police, soldiers, communications equipment and vehicles. These people and this equipment will be used to inspect the forests and they will constantly be ready to go into action.

The conference pointed out policies, discussed suppression activities and sought measures for suppressing lumber smuggling, the secret destruction of the forests, the cutting and burning of firewood and shifting cultivation. It also discussed restoring the forests, evaluating the results, following matters and cooperating with the officials concerned in all sectors.

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**ENVIRONMENTALISTS CALL FOR COOPERATION ON BLACK SEA**

AU111054 Sofia BTA in English 0805 GMT 11 Nov 80

[Text] Sofia, 11 Dec (BTA)--On the initiative of Bulgarian environmentalists a draft convention on protection and conservation of the Black Sea has been developed and submitted for discussion to the Black Sea coastal states. Hopes are expressed for concerted action on the part of these states to improve environment in the region of the Black Sea.

The Water Transport Institute in Varna has been working jointly for years with Soviet specialists to preserve the ecological balance in the "Black Sea-Bulgarian coast" territorial complex. Their joint researches underlie many documents as, for instance, a regulation prohibiting drainage of harmful matters in the Bulgarian territorial waters, economic sanctions for the industrial enterprises polluting the sea, and a water purification programme for all Bulgarian rivers which flow into the Danube and the Black Sea.

This September a Bulgaro-Soviet expedition carried out the researching of the transformation of pollutants in the waters of the Black Sea. A unified normative document for sanitary control and patrolling of coastal waters has been prepared. The jointly constructed separating device for purifying oil-polluted seawater has been tested on board a Bulgarian ship. Installations meeting all international requirements have been devised for collecting the solid waste discharged by ships. A special system for mutual warning in cases of sea pollution by third parties has been developed, too.

According to statistics, the annual fish catch in the Black Sea waters amounts to over 10 million tons. The catch has doubled in recent years. Seawater aquacultures have been bred jointly with Soviet researchers. Grey mullet, sard and other fish is artificially bred in seawater. Trout has been bred successfully, too, in floating fishing nets. Sea hothouses have already been constructed in the locality of the Black Sea town of Pomorie. An international research and production centre for seawater aquacultures is intended to be set in Bulgaria.

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## PREVENTION OF POLLUTION IN INDUSTRIAL ZONES

Tunis LA PRESSE DE TUNISIE in French 13 Nov 80 p 6

[Article by Moncef Majbri: "Prevention of Pollution in Industrial Zones"]

[Text] From 11 to 15 November 1980 the city of Gabes is hosting a seminar on the prevention and control of pollution in industrial zones. The meeting was organized by the Central Laboratory of the National Economy Ministry in collaboration with the American Agency for International Development. A series of very interesting communications was presented during the first day of the seminar, dealing with the law and industrial pollution in Tunisia. The health problems connected with the reutilization of treated effluents [probably effluents], environmental problems in Gabes, the quality of sea water and its control, and sources of pollution in the Mediterranean.

"What will be the position of Tunisian law in the face of the growth of the pollution phenomenon?" This was the main question asked by Abderrazak Kilani, an attorney, in his report on the law and industrial pollution in Tunisia. Public opinion, Kilani believes, has become increasingly sensitive to this phenomenon and Tunisia, which is engaged in a process of industrialization, must devote more effort to facing the problems of pollution, since no one will dare tell us whether or not we are safe from a catastrophic pollution disaster; technologic and industrial activities are the principal sources in our time of pollution and are the cause of several disasters.

Like fire or explosion, pollution has become a real danger for industrial business, because in certain regions, especially in Gabes, court actions have been recorded emanating from individuals (generally farmers) and attempting to enjoin industrialists to repair the damage caused by their polluting activities. The administration, Kilani pointed out, aware of the need to provide some real regulation for industrial institutions, reacted chiefly through the decree of 27 March 1919--a very old decree those provisions have been very little changed by later texts. To what extent can this law regulating dangerous, unhealthful and uncomfortable establishments serve to face industrial pollution? In two ways, Kilani states:

1. By preventing pollution by coercive or repressive measures in cases of unexpected disaster or violation of regulations, and by preventive measures.

## 2. By repairing the consequences of pollution.

The speaker acknowledged that the last point presents several difficulties, especially in the area of law and order (problems with demonstrating a direct and certain causal connection, problems in cases where there are many polluters or the pollution crosses borders, etc.) and economic, social and political areas. Thus, if we schematize the problem we find ourselves on the one hand faced with a victim whose rights are being violated because he had the bad luck to live a polluting industrial activity that is certainly striking a blow at individual rights by its polluting activity, but which is benefiting the community by that activity.

To remedy this situation Kilani suggests some "solutions:"

Institute a guarantee fund supplied by budgetary resources or taxes, on the principle of "He who pollutes, pays."

Resort to insurance as a means of socializing the risks.

Revise the very old legislative texts in such a way as to make them better adapted to the Tunisia of the 1980s.

"Health problems connected with re-use of treated effluents" was the theme developed by Sadok Atallah, the chief engineer in office of the deputy director of rehabilitation in the Public Health Ministry. The need for direct and international re-use of effluents, Mr Atallah asserted, is a good solution in several parts of the world, from the point of view of efficient and effective use of fresh water resources, because it makes available a new source of good water, making it possible to increase the existing supply and form an important future source of water supply. But this re-use, he stated, however often it is crowned with success, requires certain sanitary protection measures, and it is incumbent upon the public health organisms to provide adequate control and surveillance to prevent any risks that might be incurred, by re-using effluents, involving human health as well as any noxious effect on the environment. Such risks would result from the presence of pathogenic agents in the water being used, such as bacteria, protozoa, helminths (parasites) and viruses.

The extent of the risk depends upon the type of re-use in question (spreading manure for irrigation purposes, storing for recreation purposes, industrial use, underground water exploration, or re-use for domestic consumption). It is also a function of the ultimate quality of the final product, of the efficiency of the "design," of the operation of the treatment system, of the jurisdictions involved and the availability of funds.

Treating the used water is not sufficient for sanitary protection, Mr Atallah commented; other measures would be required, such as:

Rational preparation for the project.

Adequate legislation.

Structure for enforcement and control of the legislation.

Generalized sanitary education of the population.

Restricting the utilization of purified used water to certain crops, etc.

In conclusion Mr Atallah recalled that the promulgation of the decree enforcing the water code is likely to strengthen sanitary protection, and expressed the hope that the code, which has been in the process of being drawn up since 1974, will soon become operational.

Tomorrow we will return to hear the communications of Hechmi Ben Slimane of the Gabes Young Economic Chamber on environmental problems in that city, of Bouraoui Darmoul of the Oceanography and Fisheries Institute (INSTOP in Salambo) on the quality of sea water and its control, and of Lassaad Mesaadi on sources of pollution in the Mediterranean.

We recall that the work of the seminar began on Tuesday 11 November, in the morning, under the chairmanship of Ridha Bouhlila, the director of the Central Laboratory.

During that opening session, welcoming speeches were given by Faycal Chahtoura, the first delegate from Gabes, and Rachid Kilani, the mayor of the city. Messrs Bouhlila and Bartsh (principal IDA [International Development Association] advisor, then proceeded to introduce the principle participants in the seminar before yielding the floor to Ali Ben Gaiel of the Environment Office of the National Economy Ministry, who painted a general picture of the ecological situation in Tunisia and the Tunisian strategy for fighting pollution.

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BRIEFS

ENVIRONMENTAL FEARS--At the recent ECA/UNEP seminar for lawyers for the development of environmental protection legislation in Africa, the Executive Secretary of the Economic Commission for Africa, Dr. Adebayo Adedeji, emphasised that "the main purpose of this seminar is to make use of environmental laws and legislative machineries as management tools for environmental planning and control of development in the continent." He said it was essential for the seminar to place special emphasis on the development of sectoral environmental legislation dealing with the priority areas of concern which were approved by the Heads of State and Government of the OAU at the first OAU Economic Summit in Lagos in April 1980. [Text] [London WEST AFRICA in English 1 Dec 80 p 2432]

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## HUNDREDS OF CHEETAH ARE TRAPPED IN NAMIBIA

Salisbury THE HERALD in English 10 Dec 80 p 19

[Article by Alan Dunn]

[Text]

THE rare and elusive cheetah — protected internationally as an endangered species — is being trapped and shot in its hundreds in Namibia because of a dramatic increase in its population.

Nature conservation authorities estimate there are now at least 6 000 cheetah in the territory, inflicting losses to livestock and game which are costing farmers hundreds of thousands of rand. The cheetahs are being trapped and shot at the rate of about 300 a year.

"We are at the moment trying to get rid of cheetah any way we can, preferably by relocating them in Southern Africa," the Director of Nature Conservation in Namibia, Mr Bernabe de la Bat, said in an interview.

He noted that 138 cheetah had been shot or trapped in the Steinhausen area alone, northwest of Windhoek, in the last three years.

This unique problem has even sparked off concern in conservation circles abroad, prompting the International Fund for Animal Welfare, a Lon-

don-based non-profit organisation, to intervene.

The fund is sponsoring the relocation of 30 cheetah caught on farms in Namibia to the Kalahari-Gemsbok game park in South Africa and Botswana.

Although his department is not actively involved in the cheetah transfer, Mr de la Bat has officially sanctioned it. So far, 14 cheetah have been removed to the Kalahari-Gemsbok park.

"Farmers here are turning to us almost every day, asking what to do about cheetah," said Mr de la Bat. "We cannot absorb them in our reserves — we can't risk the chance of destroying the ecological balances we do have in these areas."

Another 140 Namibian cheetah were relocated some time ago in the Kruger National and Natal parks.

"We are at a stage where the cheetah in this country have become a problem," said Mr de la Bat. "I must stress that we merely want to control their numbers, we do not wish to exterminate them."

## PERMITS

Strictly enforced nature conservation regulations in the territory rule that cheetah may be caught or

killed only if they attack or threaten livestock. They may not be hunted as a sport or as vermin.

People catching the animals must have permits to do so. Those who shoot cheetah are required to report the incident immediately to police or nature conservation officials who investigate the matter.

Research into the reasons behind the drastic increase in Namibia's cheetah population has produced three basic answers:

• Easier access to livestock on overgrazed farms.

• Increased availability of water on ranch-lands through improved drilling techniques.

• And the eradication by farmers and hunters of the large carnivores such as lion, hyena and wild dogs, in the last 20 years or so, removing competition for prey and territory.

The only large carnivores left in any numbers in Namibia today are the cheetah and the leopard which normally do not compete.

Mr de la Bat also linked the cheetah over-population to the recent expansion in kudu numbers, making conditions easier still for the carnivore.

"Cheetah are being seen in places they have never

been seen before. They are dispersing to the Namib desert for instance, and have been seen on the coast about 10 km from Swakopmund," he said.

The present relocation project to the Kalahari-Gemsbok park is being undertaken by the internationally recognised game capture pioneer, Mr Jan Olofse, who runs a private game farm in the Kalkfeld area.

"I reckon I have caught about 57 cheetah on my land and on the neighbouring farm so far this year. They have killed game worth at least R40 000 on my farm alone this year," said Mr Olofse.

"No other countries can take them because of the prohibition of commercially exporting cheetah. So they are a nuisance in this territory. We have more than enough," he said.

Mr Olofse sometimes uses a pack of greyhounds to capture cheetah. His dogs corner the animal, and he grabs it bare-handed by the tail.

"It can be dangerous. You must know what you are doing in using this method. Once one has the tail, the animal tends to pull forwards, giving one time to take it by the neck and blindfold it," he said.

FEDERAL GOVERNMENT URGED TO BE INVOLVED IN AFFORESTATION

Appeal for Funds

Kaduna NEW NIGERIAN in English 20 Nov 80 p 24

[Article by Leke Salau]

[Text]

THE Federal Government has been called upon to allocate more funds to the Arid Zone Afforestation Programme (AZAP) in order to achieve maximum success.

This call was made in Kaduna yesterday by Mr. M.A. Ogiging, of the Forestry Research Institute of Nigeria, Kano, at the Forestry Management Planning Seminar.

Mr. Ogiging noted that policy makers had been underplaying the importance of the programme in their appraisal and allocation of funds for the forestry related projects.

This situation according to him, needed an urgent review so that other benefits of the programme could be given due consideration in the planning and management of forestry related programmes.

The AZAP was launched in 1978 to combat the encroaching desert in semi arid zone of the country through establishment and expansion of wind breaks, multi-purpose plantations and introduction of planned multi-purpose integrated land use management.

Presenting a paper titled "Shorter effects in afforestation programmes in the semi arid areas of Nigeria: problems of quantifying benefits in economic terms," Mr. Ogiging emphasized that "without plants, life on earth will come to an end".

He stressed the need for a systematic development of wind breaks in the semi arid zones which, according to him, would boost forest estate and thereby increase sources of forest products.

The wind breaks, Mr. Ogiging said, have to cover a total area of 8,720 square kilometres in order to combat encroaching desert effectively.

"If this is achieved, it means that about 8,000 square kilometres of forest estate will be added to the forest zone in the extreme northern part of the semi-arid environment," he added.

## Law Against Deforestation Advocated

Kaduna NEW NIGERIAN in English 22 Nov 80 p 1

[Article by Leke Salau]

[Text]

THE Federal Government has been urged to enact a law that will put a check on the wanton destruction of forest resources in the country.

This was contained in the 11-point resolutions adopted at the end of a week-long seminar on forest management planning held in Kaduna.

According to a communiqué signed by the seminar co-ordinator, Mr. L.I. Umeh, the conference believed that it was only through such legislation that the benefits of forests in stabilising the arid zone as well as the total environment of the country could be achieved.

The conference also called for a comprehensive land use plan for the whole country.

On arid zone afforestation programme (AZAP) and erosion control programme, the participants urged Federal Government to intensify its' efforts on them. For effective control, they recommended that the current technology developed by research as well as pilot management plans developed by Federal Department of Forestry, should be utilised.

In order to achieve maximum output in forestry operations, it recommended that workers be paid incentive rates based on piece-work system being worked out by the department.

The participants noted that the country's forest estate was less than 10 per cent which, according to them, is not adequate to meet the country's demands.

The conference, however, advocated the creation of more forest reserves in the country and called for a halt to dereservation of forests currently embarked upon in some states.

It also wanted the government to encourage private and communal forestry since research had provided species that offered both economic and social benefits within short rotations.

Data collection in all forestry operations and various land uses should be intensified. To achieve this, the conference suggested that the remote sensing facilities available at Federal Department of Forestry should be utilised to collect the necessary data for planning purposes.

The conference also called for environmental impact assessment of all projects before implementing them, adding that this must always be considered alongside economic feasibility of the projects.

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BRIEFS

GREENLAND WILDERNESS AREA--Two thousand square kilometers around the shore of the icebound Melville Bay in northwest Greenland have been set aside as a wilderness refuge for protection of nature and wildlife. The state ombudsman for Greenland said that it is necessary to protect the area because of the fact that polar bears, whales and many types of fowl breed there. All hunting, collecting of eggs, traveling through and overflying at an altitude of less than 500 meters is prohibited according to an ordinance on preserves. Only local hunters may continue their traditional hunt in certain border areas, just as they may pursue into the area animals which have already been shot. Also the traditional sled travel over the bay will be permitted, and mineral exploration by those holding concessions can continue. [Text] [Copenhagen BERLINGSKE TIDENDE in Danish 12 Jul 80 p 5]

NATIONAL AIR QUALITY MONITORING--In December the Environment Agency will proceed with a 5-year project to measure air quality at different places in the country. The purpose is to gather information on air pollution. To carry out this project Environment Minister Erik Holst is asking the Finance Committee of the Folketing for permission to set up nine temporary installations. The project is to be performed in cooperation with municipalities and counties. (Ritzaus Bureau) [Text] [Copenhagen INFORMATION in Danish 4 Nov 80 p 7]

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FRANCE

USED LUBRICATING OILS SEEN CREATING PROBLEM

Paris LE NOUVEL ECONOMISTE in French 1 Dec 80 p 35

Article by Olivier Drouin

Text Very cumbersome-used oils. Ten years of idle chatter to end up with a decree effective since 23 November. Its objective: to reduce the waste and pollution caused by 200,000 tons of lubricating oils discarded out in the open or burned by thousands of garage owners who fire their boilers with this fuel paid for by the motorist.

The new regulation is patterned after the German example. The country has been divided into 97 areas. In each area a single collector (two or three in certain instances) has been approved for a period of 3 years upon receipt of bids. The collector is expected to recover all material, even the least profitable quantities, and, at a price established during the bidding, deliver it waste-recovery industrial firms designated by ANRED National Agency for Waste Recovery and Elimination, which is subordinate to the Ministry of Environment. Certain small-scale collectors are claiming that "a monopoly has been granted to large companies." As a matter of fact, the effect of the new regulation has been just the opposite. "In our opinion, it is a catastrophe," Jacques Alexaline, director of SRRHU\*, the largest collector, stresses. "Until that time, we operated throughout the country. From now on, we are limited to only 20 departments." Therefore, the only thing profiting by the new regulation is the environment. And this is provided garage owners stop burning used oils, a practice forbidden since 1956. In the opinion of professionals, this is the same as believing in Santa Claus.

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\*Used Oil Collection and Recovery Company, controlled 50 percent by French subsidiaries of BP, Shell and Esso and 50 percent by regenerating firms.

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